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EDUCATION

VOLUME 65 — No. 10

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DEVOTED TO THE SCIENCE, ART, PHILOSOPHY AND LITERATURE OF EDUCATION

VOL. 65 JUNE 1945 No. 10

INDUSTRIAL ARTS EDUCATION NUMBER

ARTHUR B. MAYS, *Editor*
University of Illinois

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EDUCATION

VOL. 65 JUNE, 1945 NO. 10

EDITOR'S FOREWORD

LEADERS in industrial education throughout the nation are restudying courses and programs looking toward the inevitable post-war increase in demand for all types of instruction in the practical arts. Administrators and committees of teachers are trying to evaluate existing programs and to develop new courses and curricula. To do this intelligently it is important that the basic purposes and values of industrial education shall be kept clearly in mind. This is particularly true with reference to industrial arts, which is essentially a phase of general education, and therefore, has both aims and values different from those of vocational-industrial education. Notwithstanding that such work has been offered in the secondary school since 1880, and in the elementary schools for nearly as long a time, there is still much confusion in the mind of the public and of many educators regarding its aims and educative values.

At a time when unusual interest is being manifested in all types of practical-arts education, it is fitting that both the theory and practice of industrial arts should be presented to educators by those qualified to speak with authority. The presentations in this number of EDUCATION deal with purposes, values, practices and trends and will be helpful to administrators and teachers, and to the general reader who desires a more perfect understanding of this increasingly significant phase of public education.

The introduction of "Manual Training" into the secondary schools during the last two decades of the nineteenth century signalized, in dramatic and concrete manner, one of the major reforms in educational history. As the effects of the industrial revolution began to be a dominating factor in the economic and social life of the Nation, dissatisfaction with the traditionalism of the schools rapidly increased. This traditionalism was symbolized in the thinking of many, by the expression, "bookishness". The great need of the times seemed to be for men who could invent and operate machines, who could understand and develop manufactures of all kinds. The schools were concerned not at all with such matters. Hence, the introduction of industrial work into the schools appeared to many as meeting both the need for a vitalized learning experience which related the schools more closely to the life of the people, and for a form of "basic industrial training" underlying many vocations in the rapidly developing industries. This twofold claim for manual training at the time of America's most spectacular industrial expansion explains, in large measure, the extraordinary enthusiasm

of such leaders as Nicholas Murray Butler, Charles Elliott, E. E. White, and many others, to whom the educational world looked for leadership.

Throughout those early years specific vocational education could not be introduced into the "common schools". The most ardent advocates of manual training, which they often called "industrial education", were vehemently opposed to specific vocational education in the public schools. However, it seems clear now that it was the acceptance of manual training (later to be called "industrial arts") that made possible the introduction of specific vocational education during the first two decades of the new century. Throughout the history of industrial arts its significance as a foundation for later vocational-industrial education has been upper-most in the minds of many, both within and without the field of education. At the present time a renewed emphasis upon this "pre-vocational" value is evident. and there is danger that the fundamental values of industrial arts as an important feature of the general education of all those soon to play a part in the modern world is in danger of being under emphasized. It is interesting to the writer that so many of the contibutors to this symposium have stressed the general educative importance of industrial arts. It is undoubtedly true that the need for industrial arts as a basic preparation for vocational-industrial education is urgent at this time, but its educational values, irrespective of its contribution to vocational education, are probably greater than they have ever been, and every effort should be made to strengthen this subject-field as a means of general education for both boys and girls.

"The debasing illusion that man works, produces, creates only in order to preserve his body in order to secure food, clothing, and shelter, may have to be endured, but should not be diffused and propagated. Primarily and in truth man works only that his spiritual, divine essence may assume outward form, and that thus he may be enabled to recognize his own spiritual, divine nature and the innermost being of God."—Froebel (The Education of Man).

Industrial Arts Modifies Behavior

By ROY G. FALES

Supervisor of Industrial Arts, State Education Department
Albany, New York

WHEN all industry was in the home and before factories or machinery were common, each family was compelled to construct all its own comforts and conveniences. The entire family worked from dawn till dark, of necessity. The men raised the sheep and cattle from which fleece, meat, dairy products and leather were obtained. Flax, tobacco, cereals and firewood were raised and converted to the use of the family. Hides were tanned in the local tannery and made into harnesses and shoes by a member of the family or a neighbor.

The local blacksmith shod the horses, built wagons, forged and sharpened ploughshares and tools. His was an interesting trade with much of the spectacular of modern industry.

Houses were constructed by the menfolk who gathered together for house-raising bees. This event was an occasion which the pioneer loved, involving the rough, big and hard work of building a log cabin or wooden house. Boys and men worked together while the women cooked and prepared meals. Field-stone houses were common in some parts of the country only because the stone was easily available.

While the men and older boys provided food, shelter and the materials for clothing, the women cooked, preserved food, made butter and soap, baked, spun yarn, dyed yarn and wove cloth, blankets and rugs. Clothes were home made and fitted to the individual as well as possible.

Books and printed matter were scarce. Most of these materials came from England where there were small print shops. A little later small shops opened in this country and newspapers began to appear. It was a lonesome world without books, newspapers and magazines.

Travel was slow. Forty miles a day was good speed behind a horse. The horse-drawn vehicles were hard riding. Passengers were exposed to the elements. In order to have a neighborly chat it was often necessary to hitch up the wagon or carriage for the trip to the next house. News traveled slowly and distances were very great and often fraught with danger.

Children were in the center of all these normal home or community activities. Lacking elaborate and numerous toys they, like children of today, played at adult work. As they matured, and usually at a very early age, they took a large part in the family work. The chores were performed often and regularly. Boys and girls both took their part in the maintenance and organization of the home. But this is all changed in the present-day world.

Today

Father rises early, perhaps at seven, bathes in a warm room with hot water, dresses himself with well-fitting

clothes, eats a partly pre-cooked breakfast, and either drives a car or rides a bus to work at the office. The children go to school, and Mother, with the help of the vacuum cleaner and other gadgets, cleans the house. Later she makes a short trip to the store to purchase well-packaged foods. In the afternoon Mary takes her music lesson while Bob plays soccer. Mother goes to her club. When she returns home the automatic stove has cooked the dinner and in a few minutes the family is at the table. The evening brings a movie, radio, the newspaper, and in normal times, possibly an automobile ride of 25 to 30 miles just to see the scenery or get some air.

The children have had no part in the work of the home. It is not necessary in many homes. They have lost all contact with the materials and processes of construction work. They have lost all of the fun of building and, worst of all, they have lost the opportunity to use and know tools, materials and industrial products. They never learn the feel of wool, clay, hard wood, a chisel or the loom. They do not know how to sharpen a knife or make a willow whistle. To be sure the local ten-cent store manager and the corner newsstand dealer know what they like to do. They stock cut-out dolls, kites, airplane, boat, train and more recently tank kits. But these types of work lack some of the fundamental experiences which children and adolescents crave.

The Function of the School

The public school is supported by the taxpayers and therefore owes society the kind of education which our age and living conditions demand. The school must provide for pupils those things which the home formerly provided but has now lost. They are essentials. They are constants of living. Without the knowledge and ability needed to provide shelter, clothes, food and the many other necessities our cities and country would perish. Schools should organize industrial-arts classes for all children and occupational classes for selected pupils and adults in order that the individual may make his adjustment to present-day society.

Functions of Industrial Arts

If industrial arts is to meet the needs of school pupils it must be planned to reflect life today. This reflection will be found in experience which is easily understood by immature school pupils. The school work should grow out of pupil interests, desires, and the needs of both children and adults.

The great contributions which industrial-arts work can make to the school and society will be found in the interpretation of industry and knowledge of the products of industry with which we are surrounded constantly. This is a need which is common to all (100%) of the boys and girls of America. An interpretation of industry which will meet their need will include knowledge and experience which:

1 Will lead to the wise expenditure of money for the products of industry.
2 Will help the buyer or user to appreciate quality of construction and suitability of design of the products of industry found in his environment.

3 Will furnish an understanding of the nature of the various industrial occupations and the many types of work done within industry.

4 Will offer the pupil an opportunity to find an avocation of a constructional type which will satisfy the creative desires of many pupils.

5 Will teach pupils to use industrial tools and materials needed to build new articles and repair used articles.

6 Will motivate school pupils to pursue knowledge because they wish to learn more about some particular material, product or occupation.

Three Kinds of Industrial Arts Work

Industrial-arts work is organized in three different ways for the three levels of school work. The elementary school, the junior high school and the senior high school all call for a different type of work.

Elementary School Industrial Arts

In the elementary school children carry on simple construction work under the guidance of the classroom teacher for the purpose of providing them with experience and motivation which will aid them in understanding the nature of the activities of the home and the sources of the products which come into the home. These activities include the following:

1 Growth, source, preparation and preservation of foods.

2 Source of materials, and the processes by means of which textiles, rugs, and clothing are made and laundered.

3 Construction of model or play houses which illustrate the shelters used by the people of this country and others.

4 Construction of some simple tools and devices which are or have been used by mankind such as water, clocks, wind mills, weather vanes, etc.

5 Simple printing, linoleum block printing, paper making and bookbinding.

6 Building of simple pottery, tiles, dishes and other ceramic articles.

7 Construction of the simple devices used for communication including heliograph, telegraph sets, and crystal radio sets.

8 Construction and study of the various transportation devices which are within the manipulative ability of the pupil such as boat, airplane, or train models.

These activities may be carried on in the classroom by the regular teacher. To remove the classes to another room and conduct this work under the direction of a special teacher often causes industrial-arts work to lose much of its value for children. To obtain close relationship with the regular work of the classroom, paper, candles, soap or other articles may be made while studying a unit on colonial life. Another class might be studying aviation as a part of their social studies or geography work and decide to construct a model town and airport.

This work takes many forms and varies with the current interest of the class. It also speeds up the learning process if correctly organized and directed. It performs a valuable service for the children in these grades and helps them to understand better some of the abstract work which otherwise would pass by without maximum learning.

Junior High School Industrial-Arts Work

In these grades (7, 8 and 9) industrial arts work becomes a special subject which all boys are required to take in many schools and which should be required of all girls for a limited time at least. Women often use more machinery in the home than do men in their work.

The junior high school is sometimes termed the exploratory period in which children naturally are very restless and highly active. Their span of attention is short and nature forces them to rush from one thing to another. Because of this the schools should provide a maximum number of experiences. If exploration is to be accepted as a worthy objective and if it is to be attempted, industrial-arts teachers must study industry and portray it to their pupils in all of its breadth and fullness. A cafeteria type of course is most appropriate.

If the organization of industrial arts for all pupils is to become well developed and to serve its purpose it must provide the greatest possible sampling of industrial work. Employment figures offer the most satisfactory picture of what industry is and does. Figures taken from the United States Census show the following distribution of manufacturing employees for the entire country:

Rank	*Type of Industry*	*Number of Employees or Jobs*
1	Metal trades	2,089,938
2	Textile occupations	1,163,451
3	Food trades	1,132,625
4	Paper and printing occupations	868,626
5	Wood industries	743,531
6	Transportation equipment	649,487
7	Chemical industries	404,249
8	Leather industries	359,858
9	Stone, clay and glass	337,894
10	Electric machinery	335,248
11	Miscellaneous industries	303,132
12	Tobacco industries	96,035

The above figures showing the number of people employed by industry simultaneously show the number of positions which will ultimately be open to the high school youth of today. Metal, textile and printing industries offer youth more jobs than any of the other types of work because they employ more people. If industrial arts is to reflect industry these three types of work will be found predominant in industrial arts departments.

The other industries which are a part of a true exploratory offering in this subject include woodwork, transportation, leather work, ceramic and other clay and earth products and electric machinery. When all of these types of industries are included in every industrial-arts department, pupils will receive good consumer education and also broad exploratory experience which will play a vital factor in guidance.

All the major phases of the above industries should be a part of the exploratory experiences of junior high school classes. Without a complete offering how can a pupil possibly select a life work in industry or be successful in isolating a deep-seated avocation? The full range of activities should be accepted by all junior high school shop teachers and supervisors. They should be a part of every junior high school course regardless of whether one or more teachers are instructing the classes. To be sure no

pupil can possibly complete a project in all of the types of work, but within the three-year period he can sample most of them. This sampling of types of work is the only sound basis for choosing a life work and the only way in which a pupil can become acquainted with the tools and materials which will make consumer education a meaningful thing as he comes to the period when he will be spending much of his money for the products of industry.

Senior High School Industrial Arts Work

The nature of the pupil in the senior high school is very different from that of the junior high school. He is older, his outlook is more mature and he begins to reach the period when he will be earning an income. He is approaching the period when he will obtain a position and marry. He wants to do things well and will respond to teachers who insist that all work be carefully and correctly done. Praise for good craftsmanship stimulates him to do better work and develops an occupational trend. Classes in shop work in these grades are usually elective and tend to stress quality workmanship. Without this influence the senior high school pupil of ability will not elect the courses offered by shop teachers.

However, there are many pupils in these grades who cannot decide what occupation they wish to follow. They hope to go to college and they suspect that they may not be able to do so. College being the approved sequel to high school, they hope and plan for college entrance. Their uncertainty and indecision make them somewhat restless and prevent their settling down to one type of work and becoming expert in it. The same tendency causes them to remain in the academic high school and to refrain from enrolling in a technical or business school. These pupils need continued exploration and increasingly difficult and challenging work.

To offer the continued exploration, schools should continue to organize broad and rich courses in the senior high school with the opportunity for any particular pupil to follow a single type of work as far as the ability of the teacher and the type of equipment will allow. To meet pupil needs in these grades general unit courses may be offered to boys. Flexibility and adaptation of these courses to individuals will hold some pupils when nothing else will. The courses which will be most helpful here are:

General woodwork including concrete work, carpentry, furniture making, pattern making, model aircraft construction and boat building.

General metal work including soft metal casting, sheet metal work, art metal work, forging and heat treatment of metals, machine shop, automobile mechanics, aircraft engine mechanics, plumbing and welding.

General electricity including wiring, lighting, heating, radio, telephony, telegraphy, electronics, motor and generator work.

General textile work including dyeing of yarns, weaving, making of simple garments such as gym shorts, caps, shop aprons, etc. and the cleaning, repairing and pressing of clothing.

General ceramics including coil pottery, tiles for table tops, throwing on the potters wheel, slip casting of dishes, glazing and firing.

General printing and publishing in which paper is made, printed and finally bound into books, casting of type, four process color work, together with the usual poster, invitation, business card and school program type of work.

General mechanical drawing including blue print reading and sketching.

There are other types of courses of the unit variety which seem to meet needs of pupils in some of the larger schools. They include such subjects as aviation, automobile mechanics, printing, furniture making and similar courses.

Summary

Industrial arts work is the study of industry, its materials, the processes and methods of manufacturing, the products and the organization and human conditions found in industry. It is studied chiefly through construction work together with discussion, reading and observation.

If it is developed to match the range and types of industries, and if the work is interesting to school pupils it offers them a very practical and most useful type of work. The results of these courses can be stated briefly in the following outcomes:

Outcomes of Industrial Arts

Consumer education—If our pupils are to learn to buy intelligently they must learn to know all kinds of materials and products, to recognize them, to care for them, as well as know good construction.

Appreciation of quality—Quality depends upon design and perfection of workmanship. Construction of articles with tools and materials will provide pupils with some of these appreciations.

Occupational information—Experience with the tools, machinery and materials of industry gives pupils an understanding of how shops are organized and the kind of work which has to be done. The monotony of production work is felt and understood after an experience is had.

Avocations — Hobbies are found through working with a variety of things until an interest or ability is isolated. The variety of hobbies which can be sampled in this work is numerous.

Repair values — Experience with tools and materials makes youth resourceful in repairing old and constructing new articles in and around the home.

Motivation—The constant application of science, art and mathematics to the various types of shop work impresses the value of these subjects on the minds of youth.

Reflective Thinking *as* An Aim *in* Industrial Arts Instruction

By JOHN A. FUZAK
Instructor in Industrial Education
University of Illinois

A professor became interested in determining the cause of intoxication, and decided to conduct a personal investigation. That night he drank two rye highballs with soda, and since he was unaccustomed to drinking, became thoroughly intoxicated. The next evening he continued his experiment by drinking highballs made of gin and soda with the same result. The third evening he drank scotch and soda with the usual resulting confusion. On the morning of the fourth day, the professor's indisposition led him to feel that enough evidence had been gathered, so he drew his conclusions. Since intoxication had been produced on all three occasions, and since soda was the only common element, the professor became unalterably convinced that soda was the intoxicating element. One cannot deny that the professor had been doing thinking of a sort, but his process of deduction could not be regarded as genuine reflective thinking or reasoning.

Reflective thinking is one of the convenient terms used to indicate use of the higher mental processes. It would be difficult to describe exactly what constitutes the higher mental processes psychologically, since whatever constitutes the nature of "mental" and "psychology" differs with the various schools of psychology. However, it is necessary to describe in some way what is meant by the higher mental processes.

Operations and functions of the senses, such as perception through the sense organs, are usually classified as lower processes. Experiences which may be reduced to sensory experience, but which do involve some thinking are given an intermediate position. Some of these might be: imagining, comparing, remembering, recognizing, etc. Obviously, the higher mental processes must be built upon a foundation of the lower processes, but include something more. The additional element is the introduction of abstract processes in analyzing, understanding, deducing, and generalizing. The act of inferring and demonstrating, or systematizing knowledge deductively, is considered an exercise of the highest mental processes. This type of thinking is reflective thinking.

The development of reflective thinking in pupils is an important aim of educational efforts and processes. In any scheme of education where learning does not rise to the point of reflective thinking, education does not go beyond the point of conditioning or training. Pupils must be taught to develop the habit of using the method of thinking in solving their problems. The alternative is the use of animal-like trial and error methods, or the

totalitarian method of depending on someone else for the answer.

Growth in the complexity of industrial processes, and in economic and vocational life necessitates the development of habits of thinking. It is conceivable that the employer can install machines to do everything but think. Encyclopedias, reference books, and tables can displace memories, but nothing can displace the human ability to do reflective thinking. General education must increasingly emphasize problem solving rather than memorization, at least at the secondary level. Vocational education must also recognize the need for emphasis on the development of habits of thinking.

Because of sudden changes in industrial processes, versatility has become increasingly important in training for occupations of any type. Occupations and even professions may disappear almost overnight. One of the best ways to achieve versatility is through the development of habitual analytical thinking. Probably the most valuable transfer of training from one occupation to another lies in this habit of reflective thinking. The result might be the pioneering and creation of jobs rather than the memorization and hunting of jobs.

The development of the habit of an orderly method of procedure in the performance of any task has been regarded as an important objective of industrial-arts teachers. The development of this habit depends upon the development of habits of planning. It is impossible to plan adequately without reflective thinking; therefore, training in thinking becomes of prime importance in the attainment of this objective.

Most of the research studies bearing on training in thinking demonstrate the possibility of gain in ability to reason, as well as the transferability and persistence of results. Although teachers cannot create thinkers, it is safe to assume that they can improve greatly the individual's intellectual operations. From the standpoint of philosophy Bode, in *Modern Educational Theories,* describes thinking as the finding and testing of meanings. Meanings must grow out of experience. It is possible to enrich the experiences of pupils and help them to find the meanings of their experiences. It is also possible to enable them to test the meanings of their experiences; therefore, it is possible to teach them to think.

The industrial-arts teacher is presented with numerous opportunities for promoting training in thinking. It is true that the teacher whose interest lies only in making things cannot perceive these opportunities. The industrial arts teacher has the advantage of a series of unit problems which are presented in a real and natural sequence. These are the jobs or projects. In order to complete the job or project, an analysis of operations and plan of procedure are necessary. The planning of the procedure and the anlysis can be made very helpful in training the pupils to think effectively. The making of the project serves as a vehicle for testing the quality of thinking done.

The industrial-arts teacher can promote reflective thinking in other phases than the planning phase; indeed he must, for pupils cannot be made thinking individuals if there are times at which they are discouraged or even prohibited from thinking. Reflective thinking can be promoted if

the "why" of fundamentals or operations is stressed. Why is oil used on the oil stone? Why does the grinding wheel turn in the direction that it does? Why is the soldering copper tinned?

Examinations also can be made effective in promoting thinking. Some tests actually inhibit thinking, since questions can be answered solely through memorized facts. Pupils will tend to memorize when they are graded on efficiency of memorization. Questions should involve application of facts to to the solution of problems, rather than mere knowledge of facts. This can be done in either objective type or discussion type tests.

The teaching of thinking lies mainly in the method of teaching. The method of arriving at an answer probably should be given as much emphasis as the answer. A correct answer which is not the result of thinking is just as faulty as the wrong answer. All conclusions must be tested. A solution to an individual's problem depends upon what he cares about. The individual must learn to arrive at his own conclusion through thinking, to accept the consequences of that conclusion, and to use that experience in his future thinking. If an answer is wrong he needs to find out why it is wrong, and how he can best correct his mistake.

Many industrial-arts instructors teach planning with varying degrees of success. Most of them do not go far enough into the planning process to actually train the pupils in the habit of solving their problems by reflective thinking. It is essential to require that reasons be stated in connection with the order of operations in the plan or procedure. The teacher cannot know the value of the conclusions reached unless he knows the reasons for these conclusions. At the same time, in aiding pupils to correct their plans, the teacher should not be dictatorial. If the pupil is firmly convinced of the practicality of his plan, it is better to allow him to procede than to impose a change. Most teachers have been amazed at the success of some unorthodox ideas. Henry Kaiser's ideas of ship building were entirely unorthodox and impossible from the standpoint of experienced ship builders.

It is essential for the pupil to reexamine his plan of procedure upon completion of the job and make revisions in the original plan where necessary. This step aids in keeping the thinking process dynamic. It may also be of advantage in summing up certain generalizations for use in future planning.

Finally an attempt should be made to apply the thinking process used in the solution of the problem to other areas. Too many times teachers fall short of their goals by assuming that applications are obvious. Industrial-arts teachers have often criticised teachers of academic subjects on this score, and yet they too are sometimes guilty of the same offense. An opportunity for application might present itself in the preparation of reports. Some type of planning enters into almost every task, and the pupils should be made aware of this fact.

Certain cautions must be observed in training pupils to think. One soldier approached another on the street and the following conversation was overheard.

"Is you is, or is you ain't gwine pay them two bucks you owes me?"

"I ain't sayin' I is, and I ain't sayin' I ain't."

"I ain't ask ain't you is, I ask is you ain't."

This seems an excellent example of word juggling—there is danger that pupils will indulge in mere word juggling in dealing with imageless abstractions. This is especially true in making applications of planning to other areas. The teacher must be ever on guard against clever word juggling without genuine understanding.

Often teachers raise the objection, "That's all very fine in theory, but the description is too general. How can habits of reflective thinking be developed in some specific situation?" In order to answer this objection, an attempt will be made to set up an illustrative lesson from the field of woodworking.

In order to plan a job, it is necessary that the learner should reason, and he cannot do so unless he has had analagous experience on which to base the reasoning. The setting of the following lesson assumes certain previous learnings and conditions.

It assumes that the problem has been selected, the drawing and bill of materials made, and that the learners will have performed many of the operations involved in the new project or job. Some new operations will be introduced; for example, several new joints will be made. Though the learners may not know how to make the joints, they will be familiar with them. The class has had some experience in making simple projects, and with the planning of those projects, even though the plans have been largely a product of the teacher's thinking.

Lesson

One of the Objectives of the Course:

To develop the habit of orderly and methodical procedure in the performance of any task.

Objective of the Lesson:

To teach the pupils how to plan the procedure for doing a job by reasoning or reflective thinking.

A finished project is brought into the classroom. This finished project is similar to most of the projects to be made by the group. It might be an end table. The table is brought before the group rather than a drawing of it, to insure against a lack of understanding by any of the group due to weakness in reading blue prints or drawings. The end table is placed before the class, and they are told that the group will analyze the table and plan a procedure for making it. The similarity between the table and the jobs they are about to perform is pointed out. It is further made clear that the plan of procedure is a step-by-step plan to be followed in doing the job.

The teacher explains—

"In order to plan a procedure for making this table, it is necessary to find all of the joints that are used—in fact, it is necessary to recognize all of the operations which will be performed. The noting of these joints and operations is called analyzing. Obviously, the first step in analyzing will be to separate the table into its several parts, since each of these parts must be made separately. For example, this table has a top, which is one part, four legs which might be considered another part since they are all exactly

alike, a shelf, and four rails. The next step is to decide which part to make first, which to make second, which to make third, and which to make last. Then we shall analyze each of the parts to find out what operations go into the making of each part, and finally we shall arrange the operations in the right order for each of the parts."

The teacher lists the parts of the table on the board and says, "The first step, then, is to decide which of the parts to make first, which to make second, and so on. Which would you make first, Jimmy?"

"I'd make the top first, 'cause it's the easiest to make."

"I'd make the legs first, because they're the hardest," says Jerry.

"I'd make the top first, because I think it's the hardest to make," says Bill.

Bob volunteers, "I think the legs would be the easiest to make, so I'd make them first."

After the discussion goes on for a while, it might be well for the teacher to stop it, and point out the weaknesses—that there is no agreement as to what is hard and what is easy, and that the same arguments are being used on both sides. The teacher might ask, "What do you know about wood that might affect your choice?"

If there is no satisfactory answer, he might ask, "What do you know about the warping of wood?"

"Sometimes after you've squared up a piece of wood, it warps and then it isn't square any more."

"Does a long narrow piece warp as much as a wide piece?"

"No, a wide piece warps more and in a different way—across the grain."

"Yes, wood warps much more across the grain than it does with the grain. Could you use this knowledge in choosing the part to make first?"

"I'd make the long narrow pieces first, because when I put them aside to work on the other parts, they wouldn't warp out of shape. I'd make the legs first."

"What part of the table has to be the smoothest and have the best finish?"

"The top and maybe the shelf."

"What may happen when a finished piece is set aside until all the other parts are finished?"

"It may get nicked up or scratched. I'd wait and make the top last so it wouldn't get scratched."

Etc....

The planning continues until the procedure has been determined for making the parts of the table and for each of the parts. This has been done in order to teach the general procedure for planning a project. The teacher should call the pupils' attention to the fact that each succeeding step was determined by some reason, and also to the types of reasons involved. The reflective thinking done by *each* individual in the group is later done in connection with planning the procedure for his own job. Before the pupils begin to plan their individual projects, the need for planning and its value are considered. This is done in order to achieve one of the objectives of the course—developing a habit of methodical procedure in the performance of a task. Later on, further attempts will be made to achieve this objective through practice in planning reports, themes, or other problems facing the pupils. In the making of individual plans of procedure, each pupil must list the reasons for deciding on

a particular sequence of operations. Each pupil's plan and reasons will differ from those of the others because of the differences in projects and materials used.

The final step is the reconsideration of his plan by each of the individuals upon completion of his project. Pupils are asked to list any possible changes, together with the reasons for making the changes, as well as any general knowledge which they would use in planning any future project.

An attempt has been made, in this brief illustrative lesson, to show the possibilities of developing thinking habits. Obviously, the possibilities have not been exhausted. When teachers are convinced that much can be done to improve pupils' thinking processes, they will perceive many situations which can be utilized in stimulating thought of a reflective nature. If they are aware of the significant role played by thinking efficiency in determining success or failure, industrial-arts teachers must accept the promotion of reflective thinking as an important aim of instruction.

"I hold no brief for a type of education in which culture and utility are mutually exclusive. An educational program founded upon the life-career motive does not imply a scheme of gross utilitarianism. There is no divorce between labor and culture."—William L. Ettinger, Supt. of Schools, N. Y. City, (1918).

Industrial Arts *and the* Needs *of* Adolescents

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THE underlying assumption herein is that secondary education should be directed toward meeting the needs of adolescents and that industrial arts is an integral part of this function. As used below, industrial arts is defined as an area of education devoted to the development of understandings concerning the production, distribution and use of the world's goods and services. It is a program in answer to the common or general needs of life and designed, therefore, to serve both boys and girls irrespective of future occupation.

Among the most complete researches published on the subject of adolescent needs, to come to the attention of the writer, is the work of two different committees of the Commission on Secondary School Curriculum of the Progressive Education Association.[1] In these studies, it is proposed that needs may be thought of as having either one of two points of reference. That is, a need may occur in relation to innerfelt tensions or to lack of adjustment of the individual with his surroundings. In this respect, needs exist in the form of the individual's own personal problems at any given time in his development. A need also may have a distinctly social point of reference. Social needs exist in the form of demands of the social life upon the individual of which the adolescent may not be aware, but lack of realization of the condition may stand between him and optimum growth. Thus, with social needs, it will be necessary at times for the school to make the adolescent aware of these demands and, at the same time, to indicate means by which such responsibilities may be met.

The Need for Personal Health[2]

As here conceived, health is as much a positive quality in living as it is freedom from illness or disease. To meet this need in any satisfactory degree, the mental and emotional well-being of the individual should receive attention along with consideration given to his physical fitness. The therapeutic value of industrial-arts activities, that is manipulative work, for the maladjusted and mentally sick is well known. Suffice it to say that the industrial-arts teacher is the person to whom the school must look increasingly for service to these individuals as they are found in the junior and senior high schools. Sensing this condition, steps

1 Committee on the Function of Science in General Education. "Science in General Education." N. Y. D. Appleton-Century Co. pp. 591 Committee on the Function of Social Studies in General Education. "The Social Studies in General Education." N. Y. D. Appleton-Century Co. pp. 401.

2 The writer is indebted to the Committtee on the Function of Science in Gen. Ed., Ibid., for needs analyzed herein.

already have been taken in some teacher-education programs, both pre-service and in-service, to see that the industrial-arts teacher receives instruction in mental hygiene.

Equally important is the contribution that industrial-arts activities can make to the health of the apparently stable and well-adjusted individual. Both medical and psychiatric authorities assert that most people today need some kind of stabilizing factor in the form of recreational activity, which permits relief from tensions and strains, and, at the same time, restores the system to its physical, mental and emotional equilibrium. No doubt, reports of the increasing number of patients, aside from war casualties, confined to mental hospitals are testimony to these claims. When considered in comparison with the restricting nature of academic work for individual expression and activity, it is not beyond reason to believe that industrial arts can serve as a balance wheel to a sizeable number of adolescents in their school life. In addition, it is no less unreasonable to believe that through industrial arts many will develop wholesome recreational, or hobby, pursuits that will continue into adulthood and serve as an antidote to emotional disorders.

Any industrial-arts program, worthy of the name, places considerable emphasis upon safety of the individual and the group as an essential part of the pupil's education. Attitudes and understandings on safety gained through industrial-arts experiences are of general consequence to living in a mechanized world.

The Need For Self-Assurance

The desire for personal worth is not peculiar to adolescents. In fact, it is present throughout a person's life span. Consequently, youngsters enter the secondary school with established notions concerning their own adequacy, which may range all the way from self-depreciation in some to unwarrantable self-exaltation in others. Due to the precariousness of adolescence, however, it is imperative that the school give close attention to the individual in his sense of worth during this time when he is attempting most desperately to establish a pattern of life for himself.

One significant mode of behavior in this connection, is the manner in which the adolescent attempts to prove his personal worth, both to himself and to others, through competence in doing things. Here, industrial arts has much to offer. As the individual works with materials and color, shaping and arranging them to his liking, he gains a sense of prowess as master over situation. His finished work stands as an object of his own efforts and accomplishment that he and others may behold. With materials and color, the adolescent also acquires new means by which to express his ideas and feelings. Through industrial-arts, boys and girls are brought into more intimate communion with the material products of their surroundings. They begin to understand how commodities are produced and brought to them. They can reflect on these products in terms of design, of processes in construction, of use and operation, and on their social significance. In addition, they realize more fully how the work of the world is carried on and understand more completely many occupations at which people work. Briefly, self-assurance is favored in that a

whole new world is opened to the individual over which he can exercise increasing command.

The Need for a Range of Personal Interests

One of the benefits usually attributed to industrialism is the reward of a gradual increase in output of the world's goods with a diminishing amount of time that the worker is required to spend on the job. As to the future, there can be little doubt that this condition will prevail for an indefinite period. Yet, the fact that the individual has comparatively more leisure, in itself, may or may not be an asset to the common good. Additional leisure may be appraised as desirable or undesirable only by passing judgment on how people elect to spend their free time in terms of the effects of such choices upon the social structure. Therefore, our attitudes toward leisure, as well as the ways that we encourage and provide for leisure-time pursuits are factors of social consequence.

When properly used, leisure is positive and growth rendering, not negative nor aimless in character. Interests and pursuits should be encouraged and developed not simply to occupy time, but to direct human energy toward constructive ends. Such engagements not only contribute to the general welfare but have a deepening and broadening effect upon individual personalities, for they frequently lead to additional understanding and new interests. To help the adolescent develop interests which will enrich his own as well as the common life, the industrial-arts program should be so thoroughly stimulating in challenge and rich in opportunity, for both individual and group work, that no pupil has time to engage in all that the program has to offer. It is in such a setting that the individual is more likely to come to the realization that life can be greatly enhanced not only through one consuming interest alone, but also by being interested generally in things that comprise the material aspect of our culture. For example, the ordinary act of reading a book or magazine may be intensified proportionally for the person who is familiar with various styles of type faces, with different grades and kinds of paper and how they are produced, with the several processes of printing, with the ways that pictures and illustrations are obtained and reproduced, as well as the manner in which books and magazines are printed and bound. In this respect, the graphic arts offer further opportunity for developing interests in adolescents by acquainting them with materials, techniques and processes in sketching, block printing, etching, engraving, photography, lithography, posters, signs, lettering, etc.

Studies concerning the home also are rich in possibilities for developing both the special and more general interests in material things. The various modes of domestic architecture in their original and adapted forms, as well as landscaping may be studies for this purpose. The same is true of all furnishings and decorations in the home, such as floors and floor coverings, period furniture, chinaware, pottery, pewter, glassware and silverware.

No elaboration is needed on the value of craft work for fostering enduring interests. The more or less phenomenal rise of the home workshop with people in all walks of life is testimony to this effect. The growing

handicraft movement in this country, embracing whole sections in some places and certain cities and states in others, is further evidence of the appeal that craft work has for people as a leisure time pursuit. For more complete service to the community, instruction in the crafts for adults and out of school youth may well be considered as much a part of the industrial-arts program as such instruction within the regular school day. As with adults, instruction in the crafts for adolescents would include a wide range of work in metals, woods, plastics, leather, textiles, graphic arts, ceramics, electricity, paper and others.

The Need for Esthetic Satisfactions

Experiences that are charged with esthetic quality frequently have been too narrowly conceived. At times, the esthetic factor, itself, is shrouded in mystery, and, according to certain schools of thought, limited to a restricted number of so-called art media or products. When judged, however, by an analysis of what constitutes an experience it will be found that the esthetic quality may be present in *any* experience that is challenging and meaningful to the participant who has carried it to a degree of fulfillment.[3] Thus, if learning is regarded as the acquisition of new meaning through participation, the situation from which the individual derives esthetic satisfactions is also the one in which real learning and growth occur.

The necessity of such experiences in an educational program requires no comment. To provide esthetic satisfactions through industrial arts, then, the work, first of all, must be challenging to the individual. In addition, the teaching-learning situation should be one in which the pupil may establish and pursue his own purposes. To the extent of the adolescent's ability, the situation also should inspire originality, creativeness and fineness of workmanship. This is not to overlook the fact that the pupil, at times, may want to duplicate something that he has seen, nor is it to discredit the educational value of such an undertaking. Initial work many times may be little more than duplicating, but, where abilities permit, the individual should not be allowed to remain at this level for any length of time.

Yet, it would be sheer folly to expect innovation from the adolescent to compare with that of the adult. The same is true with reference to the attainment of technical skill. Not until later years of adolescence, has the individual sufficient physiological maturity and enough experience to permit technical proficiency and originality approaching adult standards. If the adolescent works with a purpose of achieving desirable ends and, in his own estimation, satisfactorily accomplishes that purpose, the industrial-arts teacher may feel sure that proper growth has taken place. It is in this manner, that appreciation comes about, for appreciation can occur only in proportion to understanding. It is inconceivable that a person can appreciate something about which he knows nothing. Moreover, appreciation cannot be taught directly. It is concomitant with learning and embodied in experience.

The Need for Increasingly Mature Relationships with Age-mates of Both Sexes

Both boy and girl in later childhood

3 John Dewey. "Art as Experience," Minton, Balch and Co.

develop an awareness that marks one sex off from the other. At this age, they normally gang together in groups of the same sex and dislike having anything to do with members of the opposite sex. With the onset of puberty, however, a changing interest in the other sex develops, and the individual begins to think of himself in terms of adult rather than child status. Intense friendships commonly evolve between two members of the same sex as well as between boy and girl. These new relationships call for readjustment to age-mates and create problems as to what constitutes the proper manner of conduct with members of both sexes.

Probably no more opportunities for fostering wholesome relationships among boys and girls and between members of the same sex are afforded the school than can come through the industrial-arts program. The usual informality of the teaching situation, where pupils are permitted to move about freely and converse with each other, offers association that other areas of the school do not. Provision of opportunity, however, does not mean that it will be seized upon and used to good advantage by the youngster. Therefore, the industrial-arts arts teacher, aware of adolescent needs, will deliberately plan situations that bring students of both sexes together to work on common problems. Working together on stage scenery, posters, printing jobs, arranging displays and exhibits, or some other project of the school or community; working together on home planning, which could be done in model, if not on an actual home; working together on community surveys and community planning projects; and numerous studies such as those that might be given to occupations and to new industrial processes and materials are only a few of the many possibilities afforded the industrial-arts teacher to bring boys and girls together in a way that will cultivate greater maturity in their relationships with each other.

The Need for Adjustment to Racial and Cultural Groups Different from His Own

Children of elementary school age normally make little or no distinction between their playmates and associates on the basis of ethnic origin. This condition has prompted someone to say that children are the only true democrats among us. However, numerous influences come to play upon the individual during adolescence that tend to draw sharp distinction between people according to economic status as well as to racial and cultural background. It is well known that these influences create certain fears in some youngsters concerning people who differ from the group with which they identify themselves. There are others who develop bitterness and hatred toward different people, which, at times, result in open hostility. The effect of such feelings and attitudes on the democratic way of life is obvious, and the obligation of the school to society in matters of this kind is equally clear.

American culture is what it is largely because of the contribution of peoples of all races, creeds and cultures, from all parts of the world. The industrial-arts program, along with other areas of the school, has a responsibility to both the individual and society to cultivate understandings that will make for amiable relationships between members of the different racial and cultural groups within our

own borders as well as those outside. This may be done by calling attention to the significance of the origin and source of the many materials, products, tools, processes, designs and forms with which the industrial-arts program deals constantly. For example, paper, a material without which the development of the present civilization would have been impossible, came to us via Europe from China. The Chinese had used paper apparently for centuries before the secret of making it was wrested from them by the Persians and carried to the European continent. From the time of Johannes Gutenberg, inventor of printing with movable type, on down to the present the Germans have contributed significantly to the graphic arts field. Additional illustrations of how our life has been enriched by the contributions of many people of different origin is to be found in the fields, textiles, electricity, transportation, architecture and the whole array of household furnishings. In fact, there is precious little in the field of industrial arts that has not been influenced directly by people who differ in background. Approached with a purpose of developing understandings concerning the contribution of various peoples to our culture, the industrial-arts program can render a valuable service to democracy and, at the same time, assist the adolescent in his problems of adjustment to racial and cultural groups different from his own.

The Need for Guidance in Choosing an Occupation

The occupational picture in this country has changed immeasurably since the secondary school was established. As contrasted with former generations, women now engage in almost every line of work in business, industry and the professions. What ever else the post-war era may bring it is a certainty that an increasing number of girls will seek employment in occupations previously closed to them. Inasmuch as a significant portion of manufacturing has been removed from the home and small shop during the past century, youngsters no longer have opportunity to observe many of these occupations and thereby learn of them as possible careers. Child labor legislation and labor union restrictions today prohibit entrance into many lines of work before a certain age, which limits, except for the present war emergency, continue upward. Some occupations change from generation to generation, and new ones come into existence while others disappear entirely. The service type of occupation increases in number yearly. Specialization of labor continues at a rapid pace. Add to the foregoing the appalling number of jobs created by twentieth century industrialism, from which youth may make a choice, and the problem of selecting a career confronting the adolescent today is fairly well detailed.

The manner in which choice can be made most intelligently seems to be for the individual to have acquaintance with various lines of work and an understanding of his own interests and abilities in terms of occupations therein. Since much of the world's work revolves around the production, distribution and consumption of material goods, industrial-arts is teeming with possibilities to orient youngsters to the workaday world. Various branches of the wood, metal, textile, graphic art, paper, plastic, electrical,

and ceramic industries are all represented in the industrial-arts program and offer almost unlimited opportunity for the study of occupations.

Some jobs can be investigated directly by group visits to plants and business houses. Others, due to their inaccessibility, will have to be studied indirectly through literature and film. Where possible, the pupil should be encouraged to participate in activities representative of the occupation of his choice. Since opportunity for working at a job while learning is limited, the laboratory tryout technique seems to be the next most effective means to verify selection. This procedure should help to eliminate improper work attitudes or defeatism which is likely to result from the experience of a young person accepting employment only to find dissatisfaction in the job. The person faces the choice of quitting to "shop around" for something he likes, and thereby gain a reputation for instability, or to worry along for the remainder of his life in work that has little or no appeal to him.

The Need for Wise Selection and Use of Goods and Services

Most people today have little or nothing to do with producing what they consume. Consequently, many are unable to distinguish quality of merchandise, either in terms of materials used in a product or the soundness of fabrication, unless they have received special instruction or have learned through the harassing process of trial-and-error buying. The unscrupulous manufacturer and merchant along with high pressure salesmanship have made this a problem of social magnitude. Furthermore, the problem of wise selection and use of goods is distinctly a part of the problem of deriving esthetic satisfaction. Consumer literacy then, is much more than receiving money's worth in purchase price of an article and exercising proper care to prolong its usefulness. Judgment rendered on appropriateness of an article, which is equivalent to good taste, is a factor to govern both purchasing and using.

To meet this need, the program should provide for contact with and understanding of a wide range of materials and products used in daily living. Likewise, through the making of articles, the pupils' experience should be broadened sufficiently to permit an understanding of a wide range of processes used in the manufacture of industrial products. In the planning, designing and drawing of articles that they make, the boy and girl will receive initial understanding of discrimination in and judicious use of color, line, form and texture as they are embodied into an article to be used congruously in a particular setting or for a certain purpose.

Conclusions. Limited space precludes consideration of all adolescent needs here. For the same reason, only a brief treatment has been offered on those considered. It is believed, however, that industrial-arts should be directed toward meeting these and similar needs in ways indicated. From the standpoint of curriculum planning, there are certain advantages in thinking of needs in terms of those that are personal and those that are social. First, it permits the educator to see the adolescent as a growing personality with unique conflicts that require satisfactory resolution. Secondly, the demands which contemporary life make upon the individual are brought into focus and viewed more readily and completely with the purpose of incorporating them into the school program.

Making Industrial Arts *Industrial*

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AT a recent meeting of public school administrators a speaker said that to meet post-war educational needs "we must vocationalize the curriculum." He indicated that beginning in the junior high school, the curriculum increasingly must be geared to the needs and nature of students, helping them locate and test out their aptitudes and interests, and giving their education meaning in terms of what they will do with it after they have left the public school.

Industrial arts takes on much significance in such a program of studies because modern industry is a vital and tremendous factor in everyday life. This is essentially an industrial age. Industry is the source of livelihood for a majority of the nation's people, and the life of every person is influenced to a great extent by the products of industry and by the impact of industrial organization on all forms of human endeavor.

In the bulletin[1] *Industrial Arts—Its Interpretation in American Schools* appears the statement "The public schools should be rich in provisions for pupil experiences (1) which teach the necessity and dignity of work; (2) which illustrate the diversification of industry; (3) which provide for testing personal interests and aptitudes in representative crafts; (4) which serve avocational interests in construction; (5) which develop consumer knowledges and appreciations; (6) which provide occupational training for those who plan to enter employment as industrial workers and for those now in manufacturing trades who desire to improve their proficiency.

"The first five of these points are served by industrial arts as a phase of general education desirable for all; the sixth point is the function of industrial or trade education for those who need it as specific training."

Of the five experiences which are provided by industrial arts, the first three indicate the need for emphasizing the industrial nature of the subject. Too often industrial-arts instruction is given without any reference whatsoever to the development of understandings and appreciations of the industry from which the teaching content is drawn. Too often instruction is limited to the making of projects without the students' learning how similar work is done in industry. Too often consumer values and boy interest activities eclipse the industrial-arts objectives which have to do with insights and appreciations of modern industry.

1 (U. S. Office of Education, Bulletin 1937, No. 34 p. v.)

It is unfortunate that industrial arts has been conceived and operated as a distinct entity separate from vocational education. This practice has led many industrial-arts teachers studiously to avoid teaching anything in any way which might have industrial or vocational implications. Actually, the principal differences between the two phases of industrial education lie only in objectives and in specificity of content.

To keep up with the trend to "vocationalize" the curriculum, industrial-arts teachers will need to give increased attention to those industrial-arts objectives which, though frequently published in the literature of the field, have all too often been given slight attention. It is our sincere belief that this can be accomplished without detracting in any way from those objectives which have to do with serving avocational interests and consumer knowledge and appreciation.

In an effort to point out some means whereby the industrial-arts courses can give the industrial aspect of the field increased emphasis, we are listing below a few suggestions which might be carried out by any industrial arts teachers.

1. *Field Trips.* The industrial-arts instructor who has industry within convenient access has a fine opportunity to bring students into contact with industry in action. Such trips can bring into the industrial-arts course information concerning working conditions, types of jobs, organization of industry, types of materials used, and requirements for employment at various levels. To insure desired educational outcomes, the field lesson must be worked out with care and followed up with pertinent discussion and shop activity.

2. *Motion Pictures.* Field trips often are difficult to organize because of obvious reasons; but fortunately there is available a wealth of motion pictures which bring industry to the school. A study of such motion pictures, if incorporated into a good teaching plan, gives rise to much industrial understanding.

3. *Studies of Job Requirements, Wages, and Working Conditions.* Occupational information concerning industry is a definite part of industrial-arts content and can best be taught by the industrial-arts teachers. While industrial arts should continue to emphasize *shop work* rather than reading and recitation, occupational information can easily be drawn out of shop and drawing activities. The shop work in any school is necessarily limited, and it would be doing an injustice to students to let them gain the impression that all industry is represented by the school shop program. The exploratory objective of industrial arts can be extended considerably if students are given opportunities to match their aptitudes and interests with job requirements in a broader field of industry than that contained in the relatively small industrial-arts offering of the school.

4. *Production Projects.* In contrast to the individual project, occasional jobs may be set up on a production basis, simulating real industrial experiences. Examples of this are Red Cross or USO jobs, Christmas gifts for orphanages, and banquet table or school exhibit souvenirs. Through this type of activity students gain experiences as production-line workers, and an appreciation of mass

production methods, division of labor, jigs and fixtures, special tools, etc.

5. *Industrial Shop Organization.* Student personnel assigned as shop superintendent, foremen, leadermen, operators, and safety inspectors should help develop an elementary understanding of industrial organization, relationships between labor and management and between workers, and in addition provide opportunities for students to develop qualities of leadership. The duties assigned each student, the method of assignment, and justification for promotion in the personnel organization might well be taken directly from local industries.

6. *Industrial Shop Records.* The use of time tickets, industrial-type specifications for jobs, cost records, etc., should drive home the importance of attentiveness to work, the value of tools, machines, and materials, the relationship of business activity and industry, and the relationship between cost of the products of industry and the activity of labor and management.

7. *Correct Work Practices.* If instruction in industrial arts is to give a true picture of modern industry, correct practice in the use of tools and machines is essential. Too often students are permitted to "get by" with makeshift procedures, improperly using tools and machines to do jobs for which they were never intended. Work that is done in the school shop should be appropriate for the equipment available, and the instructor himself must have the mechanical competence necessary for correct shop demonstrations. He must also "follow through" to see that his students use only acceptable procedures. Practices might well be discussed and sanctioned by committees of tradesmen.

8. *Emphasize Punctuality.* Starting and stopping class on a rigid time schedule is a desirable means of developing the habit of punctuality. In industry every minute counts, and this lesson should be taught in industrial arts. In some school shops the use of a time clock has served to emphasize this matter.

9. *Keep Students at Work Stations.* In industry workers are not permitted to leave work stations without good cause. The same practice might well be followed in industrial-art shops to develop the habit of attentiveness to work and to avoid students' gaining an incorrect notion about freedom in an industrial situation. The discipline in an industrial-arts shop might well be comparable to discipline in industry.

10. *Insist Upon Appropriate Dress.* This does not imply a uniform, but rather clothing which is suitable for the proposed activity, such as sleeves rolled up, neckties tucked in, work clothes for jobs that soil clothing. Again, industrial practice might well be the guide.

11. *Emphasize Safety.* This is important for several reasons. The industrial-arts instructor is responsible for the safety of his students and there are numerous hazards in any industrial-arts shop. The habit of working safely is perhaps the most valuable of any that can be developed in shop work. Industry is constantly concerned about safety, training in safety in the school shop program is just one more important means of making industrial arts take on industrial aspects. The industrial practices of frequent safety inspections, a shop safety organization, safety rules for all shop activities, and organized safety in-

struction should be of much significance to industrial-arts teachers.

12. *Industrial Quality of Work.* Each project or other shop product should meet acceptable standards of material, workmanship, design and finish. Shop assignments should be made on the basis of student ability as well as upon student interest and instructional content. If industrial arts is to teach appreciation of the products of industry, the physical product of the school shop cannot be inaccurately or slovenly made. Construction must be correct, and design must be good. A committee of local craftsmen might offer help in checking project plans.

Perhaps the best means of increasing the industrial nature of industrial arts is for each teacher again to study the objectives of the field. Such a study, together with an evaluation of the present program, should result in an increased recognition of the fact that industrial arts has an intimate relationship with industry and industrial vocations. For a significantly large proportion of the students, industrial-arts education is the first real approach to the field of their future employment. Certainly, then, a good industrial-arts program will be "vocationalized" to the extent that students gain needed vocational direction. Also, an "industrialized" industrial-arts program will result in needed coordina- and continuity with the vocational-industrial instruction which is to follow, whether in trade preparatory courses or in on-the-job instruction.

To make industrial arts more industrial, the teacher himself must be "industrially minded." He must give emphasis in this teaching to those industrial-arts objectives which serve to help students gain better understandings of industry and of industrial life.

Does it degrade a thing to use it? Does it degrade religion to uplift the fallen or to sustain the masses of men from falling? Is education a luxury to be restricted to a few favored fortunates, or is it a power to uplift and sustain and develop all men?—Eugene Davenport, (1909).

Grading Pupils *in* Industrial Subjects

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THE evaluation of pupil accomplishment has long been a matter of interest and concern to instructors in numerous and varied school situations. It has held the attention of pupils, parents, supervisors and administrators living in close relationship with these situations. It has been noted and "watched" by officials viewing school drop-outs and graduates as prospective enrollees for advanced preparation or for wage-earning jobs and positions. Wholly outside the usual types of our full-time day-time schools, thousands of classes and courses now obtain under an array of auspices. And teaching, anywhere and anytime, suggests grading plans and practices certain to be different in intent, nature, and quality. We are all aware that, currently, the matter of grading holds significant place in connection with the classification, training, assignment and promotion of men and women in the armed services. Therefore, it is well that an extensive literature about this universal instructional responsibility is available and increasing.

The present writer does not choose to discuss the range or the usefulness of this vast background store, nor to review or criticize any of its parts of kinds. He offers an additional statement about grading, within the realm of industrial instruction, and with particular reference to Industrial Arts courses in the secondary schools. This writing may prove suggestive for other types of trade and technical teaching, even of professional level, and may have pertinence for the more academic or general areas of the school curriculum. The lists and explanations afforded should be helpful to persons engaged in the preparation and upgrading of instructors because these materials have served the writer in similar work.

Basic Assumptions

Attack upon the problems of grading would seem to require listing of a preliminary set of assumptions and the following items are offered as such:

1. Industrial teachers need and desire to improve their grading plans, particularly in the sense of increased attention to grading pupils rather than to grading shop or classroom products.
2. A grading scheme should not be burdensome to the instructor nor unfair to any type of pupil within a given class.
3. An instructor's grading plan or card should not be confused with any record or report form necessary in whole-school administration.
4. The factors now commonly used when grading industrial pupils may

well be reduced in number and rendered less vague.

5. The factors selected for use should reflect the objectives of the course concerned and of the school in which such course is presented.

6. The factors should comprehend the progress of pupils as well as their total attainment at the close of the course or along the way.

7. The factors should provide coverage of all assumed outcomes of instruction, these outcomes being variable as to type.

8. The factors should be understood by pupils and may well be partially determined or clarified through class discussions.

9. Pupils need to learn details of the grading before the course or term begins so that the plan may serve to motivate effort toward desired ends.

10. Selected factors may well be constant throughout an instructor's schedule, department or system and such uniformity would require value weighting in terms of subjects, ages, and aims.

104 Factors and 60 Students

Several years ago the writer dealt with "grading" in one of his Summer Session classes which included about two dozen experienced industrial teachers. Two subsequent groups brought the number here under consideration to exactly five dozen. The sixty men were college students and, perhaps, one-half of them were college graduates. These persons were requested to submit slips upon which they had listed the factors commonly held in mind as they graded pupils in shop and drawing subjects. Duplicates were struck from these list and the remaining one hundred four items or factors were distributed to the third class in mimeographed form. The list was used as a basis for further discussion with that class and has been employed frequently since in ways to be explained later in this article. There follows the original list without deletion, classification or other change, except for correction of spelling.

shop product	time	design	related information
conduct	effort	workmanship	planning ability
accuracy	initiative	skill	knowledge of material
correctness	promptness	judgment	performance tests
interest	dependability	trouble making	skill at work
attitudes	cooperation	library work	failure in make-up
neatness	attendance	tests	volunteer work
appearance	intelligence	product	care of equipment
originality	notebook	projects	following directions
improvement	homework	discipline	relations with teacher
speed	recitations	procedure	amount of work
information	economy	application	quality of work
technique	orderliness	joints	help required
completeness	finish	quietness	physical handicap
consideration	safety	self-reliance	earlier experience
thrift	performance	measurement	wasted material
aptitude	personality	attention	monthly tests

capacity	results	responsibility	use of tools, machines
honesty	respect	achievement	choice of material
reasoning	health	self-rating	current practices
industry	lectures	manipulation	general impression
work habits	shop terms	demonstrations	get-by spirit
readings	daily work	jobs completed	required or elective
mistakes	time wasted	happiness	must be watched
textbook	shop trips	self-control	tool processes
reports	adaptability	resourcefulness	likes and dislikes

Note: Members of several classes have been given opportunity to suggest additions to the basic list. Extra items have been few because of the heavy chance of duplication. The reader may or may not consider the following to be real additions—patience, persistence, theory, problem solving, shop rules, leadership, citizenship. Obviously, 104 or 11 factors are too many to be continued in use as listed.

70 Students and 5 Choices Each

As later groups have pursued the same or a closely related course, opportunities have come for additional approaches to interest in better grading. The following reaction data were provided by seventy college students, about three-fourths of them experienced instructors, about ten percent of them women, practically all of the women and half of the men being engaged in vocational as differentiated from general industrial teaching. The original list of 104 items was distributed with the assignment that each person select five factors that he or she deemed worthy of exclusive use. The tally process concerned the complete basic list.

Numerical comparisons cannot be shown of the choices of men and women nor of those interested in industrial arts and trade instruction. The writer has no memory of marked differences in these respects. Frequencies with which all of the 104 items were placed in the separate sets of five are at hand, but our showing is restricted to factors chosen by ten or more cooperators. Checkings for the 19 items listed below give a total of 298 points rather than the possible or actual total of 350. The remaining 52 points lie scattered among 85 factors at low frequencies, if any.

25 shop product	16 care of equipment	11 cooperation
24 tests	14 achievement	11 work habits
22 improvement	14 follow directions	11 application
22 attitude	13 safety	10 interest
20 information	12 reasoning	10 planning ability
20 workmanship	12 industry	
19 skill	12 initiative	298 Total

These data tend to give further emphasis to the similarity of certain pairs of items in our basic list. By an arbitrary grouping these results may be shown to suggest three classifications of factors and a rather acceptable grading arrangement. Important considerations are that the cooperators did not so group them and that they were partial to an excessive number of items.

product, workmanship, and allied elements (manipulation)

information, application, planning and the like (knowledge)
attitudes, industriousness, etc. (personal characteristics)

Thus the approach by individual designation of the five most preferred factors has brought us somewhat nearer to agreement. Students in subsequent courses have been much interested in these results and have been willing to advance the project by still other means.

74 Sets of 4 Factors Each

Eighty-seven additional students of similar characterization were encouraged to think in terms of more general headings that might be used as factors. They were urged, also, to give special attention to assumed course outcomes. A maximum of six items was announced and the basic list was provided. Fifteen persons presented sets of three items, forty-seven persons sets of four items, sixteen of five and nine of six items each. It is proposed here to report only upon the forty-seven sets of four items each, with their total of 188 frequencies.

45 information	4 judgment	capacity—interest—
28 attitude	3 initiative	design—effort—neatness
22 manipulation	2 speed	intelligence—homework—
19 skill	2 reasoning	ability—promptness—
15 time	2 conduct	attention—aptitude—
13 appreciation	2 operations	application—tests—
10 planning ability	1 each for ability to please	projects—accuracy
5 product		

By resort a second time to arbitrary grouping because of seeming similarity, we may present four major types of factors with totals open to question yet with results rather satisfying.

69 manipulation and the physical product
64 information, judgment and planning ability
34 shop attitude and conduct
21 intelligence, appreciation, initiative, etc.

Some Factors Particularized

Students have been requested to explain certain popular items or factors in terms of the concrete elements which they connote. In the few samples which follow we show, in each case, what several individuals have offered as likely to comprise or to be represented by such terms or factors when they employ them in their own grading plans. These details are presented in mixed order as received but after elimination of clear duplicates.

Workmanship—accuracy, neatness, design, originality, skill at work, time, method of attack, mistakes, procedure, keep a job going, low breakage and spoilage, finish, correct methods, technique

Attitude—cooperation, the care of equipment, responsibility, conduct, respect for property of mates, interest, attendance, effort, orderliness, promptness, cheerfulness, self-control, leadership, volunteer work, earnestness, honesty, horseplay, clean up, wish to improve, industry, pride in work, willingness, cleanliness

Planning ability—self reliance, design, ability to analyze, originality, able to visualize, judgment, problem solving, economy, help required, attack, use of procedure sheets, calculation,

what to do first, making choices, creative ability, sketching

Manipulation—use of tools and machines, skill, amount of product, follow directions, ability to imitate, master of processes, waste, dimensions, correct methods, work habits, quality, completeness, improvement, help required, safety, design, care, position or form, extra work, operations, lay-out, correct own mistakes, done on time

Information — shop terms, test scores, notebook, lecture work, read instruction sheets, find what will help, application, impromptu questions, out side reading, knowledge of materials, textbook, shop trips, recitations, guidance facts, final examination, written work, bring information to class, application of principles, identification of things, judge of quality, use of library, class discussions

So we might continue in attempt to give a measure of concreteness to each main factor considered in any grading plan. The lists shown above are too extended for practical use but they are highly suggestive. Any instructor could name a brief list of details under each heading or factor that he chose to employ. These brief lists might well contain more specific items than are offered above, items that would "smack of" the types of shopwork concerned and of the courses or classes in question.

Grading Sheets or Cards

Mimeograph pages might well be prepared with a top line such as *Grading Factors in General Metal*—9B and with four to six main factors listed vertically, at the left-hand side of the paper, widely spaced. With these form sheets in the hands of pupils, the instructor could conduct a class session in which there would be developed or announced the specific elements or checking details that would particularize each factor. Pupils would write the determined details under the main heads listed and they would preserve the sheets for purposes of reference and stimulation. The instructor might use one of these sheets for each pupil of a class, to enter in a scattered way such numbers, letters or other symbols as he cared to use to indicate attainment or the lack of it on the part of individuals. If such entries were made occasionally or periodically as the course progressed the instructor would need only to review the record sheets when course grades or report cards became due.

Cards are suggested as being more convenient than mimeographed sheets for both instructor and pupils, and their cost in quantity would not seem prohibitive. It will be seen by reference to the sample below that the original form could be used for any number of classes regardless of differences among course types or levels. The main headings or general factors would be as appropriate for sheet metal and printing as for woodwork and as appropriate for a twelfth-grade as for a seventh-grade class. Packs of cards for the different groups might replace a record book because the reverse side of the cards could be designed to take care of absences or any other needed facts about the individuals.

The spaces between the factors would be used for indicating supporting details in writing or merely for the entering of attainment symbols. The

reverse side of the card might show the factor details if this were thought necessary. It would seem sufficient to decide definitely upon these details, being certain that each enrollee possesses and understands them, but to omit them from the form. Certainly such details should not be printed because they need to be established for each group in terms of course purposes and other considerations.

Likewise, the weights or values, totalling one hundred points or percent, should be omitted from the printed form. These will differ by subjects, aims, levels and the like. The weights should be set at the beginning of a course, explained to the pupils, posted on the bulletin board and otherwise kept in the minds of all. The points set opposite the weights on the card of any individual would indicate the nearness with which he approached the ideal. The sum of his points would indicate his standing in terms of a grade of one hundred. These numerical grades could then be changed easily to letter grades if the latter were the marking system of the school.

If some such technique as here outlined be adopted in a school, certain advantages will accrue and grading will be improved in a teaching area where good evaluation is peculiarly difficult. By reason of the employment of few grading factors, the true purposes of the work will be emphasized. By reason of assignment of concrete meaning to the factors, pupils will become more keenly aware of what constitutes progress and acceptance. Because factor details are made a matter of common knowledge at the beginning of a course, pupils will sense the directions in which they should strive and will think of the plan as thorough and fair. By the weighting of factors, learners will be induced to seek broad attainment in keeping with a variety of assumed outcomes of the instruction.

This article carries no suggestion that a standard grading form could or should be devised for the use of teachers in this field wherever located. The author has sought fully to protect the desires and prerogatives of instructors and their schools.

Name .....Class .....

Subject .....Period .....

Grading Plane

	Weights	Points
Manipulation	?	
Information	?	
Attitude	?	
	?	
	?	
	100	

The Home Mechanics Laboratory *in the* Chicago Public Schools

By LOUIS V. NEWKIRK
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THE home mechanics laboratory of the Chicago schools is a workshop course wherein boys and girls enjoy experiences in the practical arts. The work is an integral part of general education. The instruction centers around home and community needs. Information about household needs and skill with tools and materials used in intelligent home living are the outcomes desired for the pupils.

The home mechanics laboratory course was introduced experimentally in five elementary schools in 1938-39 when over 1,000 boys and girls in Grades 7 and 8 took the work. The home mechanics laboratory has now been installed in 150 elementary schools, and over 50,000 boys and girls are receiving instruction in 1944-45.

To meet the needs of the educational practices of today the home mechanics laboratory has incorporated the following changes in the traditional shop program:

1. The instructional content of the home mechanics laboratory course is closely related to the problems of modern life in the home and community.
2. Less emphasis is given to isolated tool processes and exercises, e. g., making joints and sewing seams without the practical application of these skills.
3. More emphasis is given to the educational growth of the child, and the projects are considered a means to an end rather than the objective.
4. The home mechanics laboratory course is a regular and fundamental part of the school program, not a special subject.
5. Girls as well as boys are given an opportunity to work with the types of tools and materials which will enable them to meet intelligently the many mechanical problems which arise in the operation of the modern home.
6. Boys and girls are permitted to work with a variety of commonly used hand tools and construction materials typical of modern life.
7. Boys as well as girls need experience with foods and clothing. Boys have clothing to select and repair and food to select and prepare, just as girls do.

The program has been planned around four specific objectives:

1. To give consumer knowledge about the selection and use of the products of industry.
2. To develop handyman abilities with common hand tools and a variety of construction materials.
3. To promote the use of handcraft for leisure time activities in the home.

4. To contribute to the development of the personality of the child and to further social objectives of general education.

The home mechanics laboratory course of study is divided into ten learning areas presented in the following sequence:

The program of home mechanics laboratory units for 1943-1944

6*B* 6*A*

September—Textiles in the Modern Home ..... 20 weeks
February—Elementary Home Maintenance ..... 20 weeks

7*B* 7*A* 8*B* 8*A*

September—Selection and Care of Clothing ..... 10 weeks
November—Selection. Preparation, and Serving of Food, 10 weeks
February—Electricity in the Modern Home ..... 10 weeks
April—Sanitation and Air Conditioning in the Modern Home ..... 10 weeks

Theprogram of home mechanics laboratory units for 1944-45

6*B* 6*A*

September—Textiles in the Modern Home ..... 20 weeks
February—Elementary Home Maintenance ..... 20 weeks

7*B* 7*A* 8*B* 8*A*

September—Household Utensils and Applicances ..... 10 weeks
November—Selection and Arrangement of Home Furnishings ..... 10 weeks
February—Safety and Ventilation in the Modern Home, 10 weeks
April—Care of House and Garden ..... 10 weeks

Instructional Materials. A course of study with teaching aids has been prepared for the use of teachers, and ten instructional manuals have been prepared for the use of the pupils. The acquisition of practical knowledge, skills, and appreciations through the use of tools and materials forms a major part of each unit of work. A pamphlet containing an extensive list of suggested projects for pupils also includes related information so that teacher and pupil may select work best suited to community and individual needs. These consist of typical jobs in the selection, care, repair, and construction of materials and household appliances used in and about the home.

Laboratory Equipment and Tools. The typical home mechanics laboratory is 50 per cent larger than the average classroom and is equipped with new, especially designed, metal school furniture. This equipment includes six large worktables and stools, two workbenches with vises tool and storage cabinets, and thirty feet of wall bench with storage space below. Two cooking tables with four-burner gas stoves at the side, two sewing machines, and ironing board, a teacher's desk, file cabinet, and wall shelves for displaying finished work complete the equipment installed in the laboratory. The room is provided with gas and electrical outlets, a sink, and running water. Built-in cupboard space is provided wherever possible.

The use of power machinery is not required in the course. The only machines provided are two sewing machines, jig saw and a hand driven tool grinder. A wide variety of construction materials is provided and includes those typical of the various instruc-

tional areas of the home mechanics laboratory.

Plan of Work. In the introduction to each unit two class periods are usually devoted to a discussion of plans; a survey and demonstration of essential tools, materials and processes; the presentation of introductory materials; the division of class into six groups, election or appointment of class chairman, housekeeper, group chairman, and deputies; and outlining the rotation of activities in the unit.

At the beginning of a work period the pupils remain seated while the class officers distribute instructional materials, tools, and project supplies. Through the use of the pupil personnel officers this takes only a short time. All the members of the class participate in the learning activities. The pupils work at their assigned places unless the nature of their work requires additional facilities which are available. The teacher gives individual help, group demonstrations of special methods, and evaluates and approves work. Class time is devoted to teacher-guided discussions, to demonstrations, trips, research, visual education, and manipulation of tools and materials.

On completion of each home mechanics laboratory unit one class period is devoted to summarization and evaluation. Pupils are always allowed opportunity for self-appraisal of work. Short objective tests are sometimes given on the information phases of the unit. Each pupil is expected to keep a notebook in which to record information of value.

The average time allotted to the sixth grade is 120 minutes weekly. Seventh and eighth grade boys and girls spend approximately 180 minutes at work each week. All classes in the laboratory are of usual classroom size.

Teaching in the Home Mechanics Laboratory. The teacher of home mechanics employs modern methods and techniques of teaching in providing for the attainment of the goals of the work. Ways of providing for individual difference include selection of content based upon pupil needs, flexibility of class organization, and work-reading materials at different ability levels supplemented with room library materials of varying difficulty.

An individual pupil record system has been developed in the home mechanics laboratory and has been used experimentally in 120 of the home mechanics laboratories. The system of records for the laboratory consists of assignment sheets, assignment cards, individual record cards, and an answer key. A class progress chart may also be used at the option of the teacher.

Modern devices to supplement the instructional materials of the course include visual aids, trips to places of interest, assemblies, and exhibits.

The Chicago home mechanics course fills a modern educational need resulting from fundamental changes in our industrial, economic, and social life during the past forty years. It is flexible so that changes may be made whenever new classroom experiences or problems in living present improved techniques.

Home Mechanics Teachers. Some teacher of home mechanics are men and some are women. They have the cultural and educational background that is required of the other elementary school teachers. In addition they must have mechanical ability and experience in the content and procedures necessary to carry on this type of work successfully.

Industrial Arts *in the* Cleveland Public Schools

By FRANK C. MOORE
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INDUSTRIAL Arts is one of the Practical Arts, a form of general education. This subject provides learners with experiences, understandings and appreciations of tools, processes, products, and of the vocational conditions and requirements incident generally to the manufacturing and mechanical industries. It provides a possibility for intensive training in visualization and interpretation.

Emphasis is given to maintenance and repair as a vital part of industrial and home efficiency.

Results in this field are achieved through design and construction of useful products in school shops, appropriately staffed and equipped.

Purpose

There are many reasons why shop work is offered to the Cleveland public school boys and girls. These reasons are listed, with a short explanation, in order that any material presented in this article can be interpreted in terms of what constitutes a program of industrial arts and what is the reason for its inclusion in the public school curriculum.

Industrial Arts Offers Unusual Explorational Experiences For Many Students. An opportunity is presented for pupils to explore tools, materials and processes. Through these experiences, they are given an insight into a majority of the materials common to the major industries. An opportunity is also given for pupils to explore their abilities and aptitudes in terms of the materials and processes to be used.

Industrial Arts Develops A Sense Of Consumer Knowledge And Appreciation. Everyone is a consumer of the world's goods. Effective consumption depends upon proper selection and use of those articles which offer the most potential possibilities for the jobs one has to perform. Appreciation comes through understanding and use. Through experience in industrial-arts work, pupils learn to operate and use most of the mechanical devices found in and around the home. Their ability to repair and maintain these devices makes for efficient consumption.

Industrial Arts, Properly Taught, Gives A Background For Avocational Interests. People without hobbies suffer in a complex social order. Industrial arts, through its offerings, gives an opportunity to work with many materials, tools and machines which have definite hobby possibilities.

At no time in the history of the development of the human race have hobbies been more essential to the peace of mind of the average American citizen than they are today. Everyone

needs something to do in his spare time. He needs something to do that requires some intelligence, some skill, and which results in a usable product for himself, for his home, or for his friends. Hobbies offer these possibilities.

Industrial Arts Offers An Opportunity For Personal Social Trait Development. Citizenship is made practical when a person is put in an atmosphere similar to that in which he will find himself in later life. Desirable personal social traits are never developed without actually living in a situation where their development is possible. The informal atmosphere of the various industrial-arts shops makes it possible for one to live a life somewhat similar to that he will find outside the classroom.

Pupil personnel organizations have been set up which permit the development of these desirable social traits. Objective means for selecting officers and personnel are used and the results have more than warranted the practice.

Industrial Arts Gives Pupils Common Technical Knowledges. Practically everything seen or used today is based on technical knowledge. Shop work is valuable to the pupil, whether he becomes an industrial worker, a manager, an executive, or a professional man. It probably is most valuable to the boy who will enter industry and most of the boys going through our shops will eventually become industrial workers.

Industrial Arts Offers A Basis For Guidance And Counselling. Guidance is giving the pupil an opportunity to explore tools, materials and processes, so that he may make for himself a right selection in his life's work. The best possible way to interpret any phase of life is to actually experience some of the work required in a specialized field. Through the industrial arts curriculum, boys are better able to select for themselves that type of work for which they have potential abilities, in which they are interested, and in which they probably will have the best opportunity to succeed.

Industrial Arts Gives An Opportunity For The Training Of Hand And Eye. Every subject in an educational curriculum has something which it contributes to the pupil which is not available in any other field. In the field of industrial arts, specific accomplishments with various tools, materials and machines are possible through actual manipulation carried on in the shop. Self development comes through actual participation. Throughout the extensive program of shop education, it is emphasized that at least 75% of the pupil's time should be spent in manipulative experience.

Industrial Arts Offers A Background For Future Technical Training And Education. A good program of shop work in the early phases of a child's development becomes a fine background on which to build extensive or intensive technical experience.

It is sometimes difficult to know when actual vocational education takes place. In the Cleveland Public Schools, at the upper secondary level, much of the work is vocational in nature and regardless of nomenclature has for its background specific training in skills which are salable in the industrial world.

Curriculum

The industrial-arts program in the Cleveland Public Schools is quite extensive in nature and covers all the

school years from 1 to 12. A program of primary work is being developed. The program in the upper primary grades has been developed for some time. Practically all the boys and girls in the Cleveland system come in contact with a program of industrial arts, called elementary handcraft, during grades 4, 5 and 6.

Shop work is required of all boys in the 7th and 8th year of the junior high school. It is an elective subject beginning with the 9B grade. Election is a matter of selection by the individual himself.

The cosmopolitan high schools in Cleveland have a rather varied program of industrial-arts work. Many of the limitations of the program have been due to the physical equipment available in the various buildings. In this type of school the opportunity to take industrial-arts work should be given to all pupils, but there should be no intensive specialization.

The technical high schools have been established in Cleveland for many years. The work in these schools is a matter of election. Boys wishing additional technical work and an opportunity for intensive specialization enroll in the technical schools. There is a trend in these schools towards a more general program with distinct specialization, but with an opportunity for specialization in more than one subject, rather than a lengthy specialized course in one narrow field.

In Cleveland there are several types of special schools. In centers where certain types of pupils are sent, there is only one shop teacher, but he is doing a teaching job of the general-shop nature.

The Thos. A. Edison Occupational School, established a few years ago, has an extensive program of shop work. It is set up with the feeling that pupils enrolling in this school are not going into highly skilled occupations but are going into operative or single purpose jobs which will not require extensive training. Therefore, the program of shop work has been set up to give a boy broad experience in many fields so that his opportunities for work are greatly enhanced through his experiences in the shops.

Handcrafts in the Elementary School

Craft teaching in elementary schools has its beginning in the kindergarten and primary grades. It is carried on in the regular classroom by the classroom teacher. Pupils in the upper elementary grades spend regular periods in a specially equipped craft room taught by a trained teacher.

Experiments in the primary grades prove that activity work offers new opportunities for the introduction of hand work. Handcraft is not thought of as a separate subject but rather as an integral part of the teaching procedure.

This purposeful activity provides the means to observe, to investigate, to play, and to construct. Concepts of size and shape begin to take form. All children work together toward a common purpose. Each subject has an equally important part in the development of the activity wherein greater freedom of movement and assignment of individual responsibilities are made possible.

Such projects as the store, the play house, the bus, the jeep, the ore boat, the airport and the post office require hand activities that stimulate the child to further accomplishments in the kindergarten and primary grades.

The Cleveland Public Schools pioneered in the field of handcrafts for the upper elementary grades. Starting with the experiment in 1929 with one craft room at Tremont School as a curriculum center, the program has now grown to eighty craft rooms in as many elementary schools. Teachers are all women and were trained by the Industrial-Arts Department through Western Reserve University.

The elementary craft room is designed to fit the needs of present day boys and girls. The room resembles a Swiss village, with two cottages on each side of the room. The cottages are ornamented with a decorative sign designating the type of craft carried on within its area. Woodcraft, art metalcraft, ceramics, painting and decorating represent the 4 areas. The textile crafts, linoleum block printing, soap carving, wood carving. leather crafts and beadcrafts constitute the major crafts which are carried on at tables in the room.

The program concerns itself with the manipulation of many kinds of tools and materials applicable to the elementary school child and provides an introduction to the industrial arts of the junior high school.

Both individual and group projects are made. The individual projects are taken home by the pupils while the group projects, usually in the form of dioramas, are kept in the schoolroom. The dioramas are closely related to the classroom curriculum subjects.

In designing individual projects, the emphasis has been placed on the wood and textile crafts. Pupils have been encouraged to make use of easily obtainable materials: corks, clothespins, spools and soap. Conservation of materials has been concretely brought to the attention of the pupils.

Radio handcraft has augmented the program of elementary handcrafts since the advent of broadcasting station WBOE in the Cleveland schools. 302 broadcasts have been given to date: a total of 19 different series. Lessons have been tuned to grades 3, 4, 5 and 6. A special series is designed for beginning groups, including mentally defective, over age, hard of hearing, sight saving and crippled children. 4,436 children receive this series. About 3,500 pupils receive the fifth grade broadcasts, to make a total of about 8,000 listeners per week.

Many materials are used in these broadcasts: paper, cloth, wood, metal, clay, soap, corks, vegetables, toothpicks, clothespins, spools, boxes, beads, etc. comprise the majority. Like other subject areas, radio handcraft uses many visual aids: lantern slides, chalk tray drawings, material samples and pictures.

Manipulation, appreciation, information, planning and designing, finishing and integration are the several types of lessons broadcast.

Experiments show that children in the 4th, 3rd and 2nd grade respond equally as well as in the upper elementary grades. The tendency is to favor these grades.

The generous response of elementary school pupils to these programs is evidence of their effectiveness.

A large number of the elementary schools are conducting model airplane clubs sponsored by craft teachers. Boys and girls are enthusiastic about the activity. Lectures, discussions and participation in the making of gliders, rubber band models and scale models are part of this worthwhile project.

Elementary craft teaching will continue after the present emergency is over. Several of the restricted materials will again be available: brass, copper, nickel, silver, leather and many others. Much the same types of projects will be made since the elementary crafts are basic and should be taught to all boys and girls of the elementary school. Children will always be interested in working with their hands.

Junior High School

Industrial Arts in the Cleveland junior high schools has been carefully analyzed in many previous reports. There should be a statement, however, to show why there are various kinds of shops in the junior high school.

The curriculum in industrial arts includes the areas of general drawing, general woodwork, general metalwork and graphic arts. These fields were not chosen at random. They are chosen because they have the greatest possibilities for the development of all the objectives set up for industrial-arts work.

They cover the major fields of industrial practice and if an analysis were made, it would be found that, through the contacts with these four fields of shop work in the junior high schools, pupils have experiences in about 80 per cent of the technical phases of work in industry.

Wood, metal, drawing and methods of duplication cover the majority of jobs with which one will come in contact. When we add plastics, general shop, general repair and maintenance of simple household appliances, and think of the possibilities untouched but available through the equipments in these schools, it is believed that they are the phase of shop work to be emphasized at these grade levels.

Definite changes are taking place in some phases of the junior high school industrial-arts curriculum. The drawing field is being experimented with at this time and as a result less time will be spent on pure instrumentation and more time will be spent on methods of interpretation. There are only two reasons for teaching drawing to those pupils not to be come draftsmen. These reasons are, first, to be able to interpret the ideas of others as presented to one in the form of a drawing; and second, to be able to present to others one's ideas through the medium of drawings. This means more emphasis on simple blueprint reading and sketching of various forms.

The general shop, or household mechanics, phase of junior high school shop work will be emphasized more and probably will not be a separate shop but areas of the work will be divided among the general metal, general woodwork and graphic arts fields. Experimentation and curriculum construction work in this field is now being done.

Cosmopolitan Senior High School

It should be constantly kept in mind that industrial-arts work is a phase of general education. In the cosmopolitan high school, no attempt is made to train boys for skilled work in industry.

The cosmopolitan senior high school program is constructed to carry on and give additional experience in the fields selected for the junior high school. Additional opportunity is given for boys to work in wood, metal, drawing, graphic arts and general shop, but no opportunity is given for boys to specialize in any one of these fields for

the entire senior high school period. The suggestion is made that boys wishing additional experience in shop work elect at least two, if not three, of the major fields offered in this type of school for additional experience.

The additional area of general electricity is being added to the cosmopolitan curriculum. Experimentation has been going on and there are great possibilities for this phase of the work in this type of school. This will not be specialized electricity as carried on in the technical schools but will be an emphasis on the general phases of electrical work, with opportunities to construct, experiment with and study electricity in its various forms.

Radio courses have been started in some of the schools. No decision has been made as to just how much of this work will be a part of the postwar curriculum, just how technical the work may become, or whether the returned soldiers will not be better equipped to carry on this work than the pupils who could be trained in this type of school.

The industrial-arts departments in the cosmopolitan high schools have cooperated successfully with the science departments in the conducting of preflight aeronautics work. Most of the teaching was done in the science department, but many of the teaching devices and much of the material used was constructed by the industrial-arts pupils.

An opportunity has been given for many girls to enroll in shop classes in the cosmopolitan high schools. General drawing, including specific units in blueprint reading, has been found extremely helpful for girls entering the industrial world. This is especially true where girls are going into some phase of inspection work.

Technical High School

The technical high school is the chief agency for the training of pupils who wish to enter directly into business or industry or to prepare for some form of specialized technical training in college. While industrial courses in a technical high school are not as vocational as found in a trade school, graduates are able to enter certain trades and industries with little or no further special training.

The technical curriculums have kept pace with the fundamental and far-reaching changes in the industrial world. This has been made possible through constant research in the field of present day industrial practices, occupational requirements, and pupil abilities.

There is a trend in the technical high schools towards pre-specializing courses to be offered during the 10th year, these are intended to give the pupil a contact with as many phases of the technical curriculum as possible. Pre-specializing courses are limited in number in accordance with the physical possibilities of the various schools.

Some consideration has been given to dividing the technical curriculum into three major fields. The first field might be called the industrial or production field. This would include drawing, patternmaking, foundry and machine shop. Pupils might specialize in two of these fields during the 11th and 12th year, and in addition, could take the other two remaining fields for part of his week's work, so that when they finished this type of course they would know the whole industrial and manufacturing process, the production

system, and be specialized to a certain degree in two phases of the work.

Another field, called the power or maintenance field, would include drawing, electricity, auto mechanics and aeronautics. During the past four years, this has become a very important field in terms of the war effort, especially for those entering the armed service. It will undoubtedly be just as important after the war is over.

The same plan would be carried out in connection with those specializing in this field as in the production or manufacturing field. Pupils would be encouraged to elect at least two of these phases of the work for specialization, with an opportunity to have contact with the rest of the field for that part of the work which directly relates itself to the specialized field.

Throughout this program of technical work, specialization means an opportunity to take one field of shop work four 45-minute periods a day throughout the school year. This work is taken in addition to the regular high school prerequisites for graduation.

The field of graphic arts education, having been experimented with extensively in the Cleveland system, shows the most possibilities at the technical high school level. It should include information about and experience in as many phases of duplication as possible. This is limited by the physical equipment, but through shop trips, visual aids, and talks by experienced men, a great contribution can be made to the field of duplication and unlimited opportunities offered pupils enrolled in such a course.

Direct Contribution to the War Effort

At the beginning of the war, various types of pre-induction courses were suggested. These courses were well thought out and of great value to boys going into the service. After a careful survey of the industrial arts program in Cleveland, it was found that all these courses were already a part of the curriculum. Some of the work suggested in the courses was reemphasized so that boys going into the armed forces would be properly prepared in the various phases of pre-induction work outlined by the U. S. Office of Education.

When the National Advisory Committee for Aeronautics Laboratory was set up at the Cleveland Airport, they required the reproduction of a multitude of drawings in order to get their project under way. They had planned on enlisting the services of draftsmen in this area, but due to the manpower shortage it was found impossible to get this done.

A contact with the Cleveland Board of Education was made and an agreement reached whereby the schools would undertake to reproduce the drawings required. Two hundred and fifteen assembly and detail drawings were divided among the three technical high schools and two cosmopolitan high schools. This work was completed and delivered to the NACA in the required time.

Industrial-arts shop classes to date have completed 4,000 articles for the Red Cross, which included writing boards, lap boards and cribbage boards. 1600 more articles will be ready for shipment to hospitals by the end of the school year. Such articles as ash stands, book wagons, folding chairs, smoking tables, bed occupational tables, backgammon boards, checker boards, Chinese checker boards, dart

boards and ping pong tables comprise the list.

Industrial-arts teachers were asked to report the numbers of articles that could be made in their shops. When the totals were compiled, they had volunteered to make many times the numbers asked for by the Red Cross.

The many articles are produced by production methods used in industry. Students become familiar with actual practices carried on in industry. Industrial-arts classes are humming with activity.

Crile Hospital will use many of the articles made in the Cleveland schools. The program for the Red Cross will be continued when school opens in the fall.

Teachers and students alike have given this project their sincere support, feeling that they have an important part in a common cause.

During the early part of the war, a request was received from the U. S. Office of Education to take an active part in the Navy Model Airplane Building Program. Plans were sent out from Washington showing the kinds of planes to be made and information about construction and finish to be used in the making.

This Navy Model Airplane Building Program became an integral part of the junior high, senior high and special school woodworking courses. Teachers and pupils accepted this responsibility and showed a great deal of enthusiasm in the project.

The Industrial Arts Department in the Cleveland Public Schools, up to the school year ending June 1944, produced 3800 models which passed a rigid inspection. These were of 80 different kinds of planes actually in use in the war. The planes, after being inspected, were properly packed and shipped to naval bases designated by the government.

This was a very worthwhile program and the teachers and pupils in the Cleveland Public Schools were happy to be able to make this contribution to the war effort.

"(Man) is born to expend every particle of strength that God Almighty has given him, in doing the work he finds he is fit for; to stand up to it to the last breath of life and to do his best.—Carlyle, (1866).

Are Industrial Arts Teachers "Different?"

By STANLEY J. PAWELEK
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The School Staff — that symphonic combination of "strings," "woodwinds," "brasses," and "percussion instruments"; each individual a capable soloist, yet his "voice" blended together with all others into a harmonious tone which is left to live forever in that most priceless of instruments — the Human Soul!

A GREAT symphony orchestra is playing. The conductor is on the podium with his baton—leading, inspiring and directing. The individual instruments, grouped and arranged on the stage in accordance with their pitch, quality, and timbre of tone, respond punctiliously to his every gesture and exhortation. Now the violins. Now the oboes. Now the trumpets. Each speaks in its own characteristic voice — plaintive, resonant, or eloquent. Trios, quartettes, and choirs, once in unison, once in harmony, exhalt to the heavens the central symphonic theme with its manifold counter melodies. There is a trill for strings, a shimmering passage for divided strings and woodwinds, and two flutes converse over a horn accompaniment. On signal, the entire orchestra roars. Perverse accents, snatches of song, and crashing chords, tumble out in a passionate fortissimo. Every instrument now joins all others in making its tonal contribution toward the accomplishment of that one all-consuming goal — the interpretation and expression of the symphony with all its contrasting moods and rhythm, but with its complete unity of sentiment and style.

This brief description of the symphony orchestra serves the purpose of establishing the rather close parallel between an orchestra and a school faculty, insofar as harmonious effort toward a common goal is concerned. Each individual in each of these groups performs his assigned functions, each contributing toward the central theme or goal. The analogy cannot be confined to the orchestra and the school faculty alone. Whenever and wherever groups of individuals are committed to concerted effort it becomes apparent. The living and working of citizens in a neighborhood, community, city, state, and nation, under established principles of government, are readily comparable to the performance of a symphony orchestra. In like manner various associations, clubs, fraternal organizations, unions, and a host of other groups must perforce emulate the symphony orchestra to accomplish their avowed purposes. Someone must lead, others must follow. Rarely does an individual member, or a small group of individuals, earn

nomination to a place of outstanding importance except for unusual or ephemeral occasions, and only when individual effort contributes to group effort. The goals of the group control and direct all individual activity. Individualism is submerged in modified collectivism. Cooperation is rewarded by greater accomplishment, as each individual shares in its attainment.

The "theme" for all educational endeavor in the schools in a democracy is the education of all persons for active and intelligent participation in the responsibilities and duties exacted of each under a democratic form of government. Earning a living and knowing how to live are subject matter areas. Intelligent citizenship demands both. The school, with its faculty, is the one designated agency whose direct assignment is the education of young people. It must, therefore, organize and administer a program of studies and co-curricular activities whose dominating objective is education for citizenship. Attainment of this objective is effected only through the harmonious and cooperative effort of many different individuals, each contributing in his own way toward the development of the many "facets" entailed in it.

The principal is the nominal head, or "conductor" of a school. Leadership and directorship are his responsibilities. Not unlike those of a symphony orchestra conductor, his duties extend far beyond that of directing on the stage before an enthusiastic audience. Extensive planning, interpretation of philosophy and objectives, provision for individual differences of both pupils and staff, curriculum construction, arrangement of schedules, financial budgeting, and scores of other activities are performed "behind the scenes' before instruction begins. His personality, education, and experience determine the degree of his application of sound principles of teaching, learning, and personnel relationships. Outstanding conductors develop outstanding symphony orchestras; outstanding principals develop outstanding schools. No school rises higher professionally than the vision, imagination, and general ability of the principal will permit.

The staff of a school comprises many types of persons rendering many diverse, but necessary, services. Teachers, principals, assistant principals, nurses, physicians, guidance counselors, engineers, janitors, truant officers, and charwomen all play a role in the attainment of educational goals. This group resembles the student body insofar as heterogeneity of traits is concerned. Each differs from the others even more than the instruments in a symphony orchestra. Two violins may be amazingly similar to each other in appearance, tone, and function, but teachers, even of the same subject, manifest essentially no similarity of personality, education, experience, intelligence, interests, or other mental, social, physical, or professional characteristics. Homogeneity manifests itself only in their united devotion to the avowed goals of education. The relative importance of the contribution which each makes cannot be easily isolated or measured. Each is necessary, yet each is different from all others. Each merits the highest praise and "applause" when the product of the efforts of all, ultimately, makes material contributions toward better citizenship and an improved nation. Yes, the "symphony" of education enlists the

"music" of many "soloists," yet the resultant "tone" cannot be ascribed to the labors of any one individual, but to the concerted endeavors of all, working with a unity of purpose.

Are industrial-arts teachers "different" from other teachers? Are they less adequately prepared for teaching assignments in the schools? Do they contribute less than other teachers toward the ultimate outcomes of education? Are they less "cultured"? Are they less meticulous in matters of personal appearance, dress, language, and social graces? Is their function in a school confined to that of "sawing wood" and "pounding metal?" Are they less professional? Do they emphasize the concrete, manual, and practical aspects of education to the point of complete exclusion of the academic, theoretical and intellectual? Are they "rough elements" of the faculty? Are they "clannish?" Are they uninformed about all phases of education except that emanating from their own shops and drafting rooms? Are they less cooperative and loyal? Are they more difficult to lead and direct? Do they speak and write less fluently and accurately? Are they less intelligent—"dumb-bells" of the faculty? Are their objectives different from those of teachers whose contributions are unquestioned?

A majority of the beliefs implied in the questions above win a nod of assent from many educators, and their judgments are not wholly founded on prejudice. Industrial-arts teachers, themselves, have not always merited the professional respect of their academic colleagues. Historically, their educational and personal qualifications left much to be desired, although the responsibility for their plight cannot be ascribed entirely to acts of their own design.

The philosophy which resulted in the introduction of shopwork in the schools was predicted upon the theory of transfer of training or formal discipline. The training of the hands through the means of carefully graduated exercises in the use of tools was held to be an eminently important factor in general education. "If the hand you deftly train, strong grows the will and keen the brain," enjoyed widespread quotation by the proponents of this new school subject. Mechanics and workmen were assigned to superintend the work because technically educated teachers were non-existent. Knowledge of materials and tool processes was paramount to knowledge of methodology. Instruction was subordinate to construction. *Doing* received the major emphasis, while *knowing* was relegated to a place of secondary importance. The term "manual training" provided an apt description of the activities conducted in these early school shops.

The teacher of shopwork or mechanical drawing in the "manual training" era was typically a mechanic or workman. His command of the English language and his knowledge of the arts and humanities were of secondary importance to his skill in the use of tools and materials. His personal appearance was unimportant to him since he was rarely seen by his coworkers or supervised by his principal. Textbooks were for the intellectuals and "sissies." Faculty meetings were not designed for his benefit, but if, perchance, he was prevailed upon to attend them, he sat in the rear of the room feeling uncomfortable and inadequate. His report forms were in-

variably late in the principal's office, and often illegible as a result of being soiled with unwashed hands. He was generally not included in faculty gatherings and social affairs, so sought the company of janitors and engineers, and of teachers of a similar type of work. The boiler room provided a ready rendezvous, offering much comfort and satisfaction — it was there that he enjoyed eating his lunch, smoking his pipe or cigar, and exchanging anecdotes. Educational terminology held no meaning for him — professional literature was an anathema; but his knowledge of catalogs of tools and materials demanded no apology. His leisure time was pleasantly, and not unprofitably, spent in his basement home workshop, where his skillful hands produced "knick-knacks" and useful furniture for his home and for his friends. His summer vacations provided an opportunity for employment in his trade. His income was thus augmented. and his knowledge of materials and skills in basic operations was increased. "There are always new things to be learned in one's trade, you know." Summer courses in teacher-preparing institutions were admittedly not designed for his needs and, in his own words, "Who wants to spend good money and time taking courses that don't do anyone any good?" "What good is a college degree to a teacher of shopwork?"

It is quite apparent from this brief description that the typical teacher of shopwork of the "manual training" era was both unprofessional and uneducated. His reign in the schools, although of comparatively short duration, served a very worthwhile purpose and yet placed severe, although not insurmountable, barriers in the way of teachers who follow. He assisted in dispelling the philosophy of academic efficacy in our schools, and simultaneously left in his wake an indelible impression, which present-day industrial-arts teachers have found difficult to eradicate from the minds of educators. Like a poorly-tuned violin in an orchestra, whose tones result only in jarring discords, this well-meaning, but poorly-prepared, person has made it extremely difficult for succeeding generations of industrial arts teachers to win the respect of academic educators, and to be recognized as integral elements in the educational scheme of things. Some few widely scattered survivals of this early species still remain. Their influence, happily, is being rendered practically innocuous as their elimination becomes progressively more complete.

The transition from "manual training" to "industrial arts" was a gradual growth brought about through an improved philosophy and the establishment of aims more closely aligned with the general aims of education. The training of the hands is no longer the major objective. The education of the whole pupil for an active and efficient citizenship is now among the prime concerns. Nor can teachers justify shopwork solely on the basis of the acquisition of information and the development of manipulative skills. New and improved habits, ideals, attitudes, and appreciations are included in all statements of purpose. Curricula for the preparation of teachers are to be found in practically all teacher-preparing colleges and universities. Graduate programs boasting industrial-arts majors are not uncommon in a majority of the most reputable educational institutions of the country.

The present-day industrial-arts teacher bears little resemblance to his prototype of the "manual training" era. He is a professional teacher graduated from an accredited teacher-preparing college or university. His undergraduate education, with the exception of a generous proportion of shopwork and mechanical drawing, is not unlike that of his academic co-workers. He has studied biology, physics, chemistry, history, English, mathematics, sociology, and other content subjects. Methods of teaching, educational psychology, educational measurements, educational sociology, supervised teaching, and other professional courses, provide him with the necessary knowledges and skills necessary for successful teaching. He converses as easily about such topics as standard deviations, laws of learning, and the Beta hypothesis, as he does about saws, hammers, micrometers, and the properties of non-ferrous metals. He is meticulous about his personal appearance and habits, and speaks the English language with precision and finesse. He reads current magazines and professional books, and contributes at faculty meetings eagerly and intelligently.

His shop is not just a place where things are repaired or constructed. It is a cheerful, professional-appearing room. In it one finds textbooks, charts, bulletin boards, pictures, models, exhibits, drawings, and other teaching aids and devices. Pupils plan, construct, read, recite, discuss, report, and criticize to the same extent that they do in other classes. They are also motivated, assisted, coached, tested, rated, informed, and graded in a manner similar to that of other teachers. Pupil growth, pupil habits and attitudes are carefully observed and recorded. Lessons and demonstrations are planned and executed with a professional dispatch.

This product of a new and improved philosophy of industrial arts in the schools is rapidly gaining universal acceptance among educators and leaders. The subject he teaches, long numbered among the so-called "fads and frills," is now a definitely established unit in the mosaic pattern of a well-balanced program of studies. He is accepted among his coworkers as an important and necessary contributor to the totality of the modern educational enterprise. He brings to his pupils a unique and refreshing experience in their quest for a functional education. Like other teachers, he teaches, sponsors clubs, supervises study halls, assists with stamp and bond sales, acts as class advisor, chaperones social events, provides technical advice for dramatic and musical organizations, directs salvage drives, and cooperates with governmental and local agencies in their efforts to bring the war to a swifter and more successful conclusion. Unlike other teachers, and because of facilities and skills which he has at his disposal, he has been in a position to direct the construction of scale model airplanes for the armed forces, games and furniture for the Junior Red Cross, splints and stretchers for the American Red Cross, protective devices for the Office of Civilian Defense, and other projects providing aid and comfort to the members of our armed forces, and protection to those on the home front. All this he does in addition to his regular duties and responsibilities, not to mention the organization and direction of pre-induction courses, often taught before and after school hours.

Are industrial arts teachers "different"? Yes! — as different as a flute is from the violin cello, and a drum from a harp! Are they undesirably "different"? No! — not to any greater extent than history teachers, English teachers, mathematics teachers, and all other members of a well-balanced faculty. Existing differences are desirable and indispensable to the smooth operation of a school dedicated to the complete education of the pupil. Their absence would result in a "tone" devoid of the richness essential to the successful interpretation and rendition of the "symphony" of education.

BOOK REVIEWS

Vocational Education for a Changing World. By F. Theodore Struck. New York. John Wiley and Sons. 1945. vi and 550 pages. $3.50.

When Dr. Struck died a bit over two years ago, he left the twenty-four chapters of this book as a monument to his long and valuable service in the cause of vocational education. Dr. Struck, late Head of the Department of Industrial Education at Pennsylvania State College, was long a leader and a teacher in industrial education. Two of his books, *Creative Teaching* and *Foundations of Industrial Education*, are among the most important in their field. This last work, *Vocational Education for a Changing World*, is a guide for teachers, supervisors, principals, and directors in vocational education as well as a sound expression of the philosophy of vocational education. There is throughout the whole book the evidence of Dr. Struck's keen insight and knowledge. The historical aspects of the development of vocational education are tersely set forth and Dr. Struck has indicated the importance of the length and shadow of the great leaders who, after 1876, assisted in the work of raising the comprehensive structure that is today American vocational education. Dr. Struck has stressed the concept of honest, careful, and skillful work as the basis for any sound system of vocational education. There are careful distinctions made between vocational-industrial education and industrial-arts education and vocational-technical education. The contributions of educators and their societies, labor and labor organizations, employers and their associations are fully explained. The various federal legislative enactments and the procedures in their operation are also given in full detail. In short, this volume is the most up-to-date, complete, and more carefully documented treatment of the whole subject of vocational education. Those who admired Dr. Struck, read his works, and especially those whose fortune it was to have studied under him, will cherish this volume as the last word of a great teacher and a painstaking worker.—WILLIAM P. SEARS, Department of Vocational Education, New York University.

Drawing for Life and Industry. By Daniel Green. The Bruce Publishing Company. Milwaukee, Wisconsin. 1945. Paper. 181 page. $1.56.

This manual, by an instructor of machine drawing and general drawing at Stout Institute, is presented as an approach to drawing through life situations. Logically arranged projects aim to give to the student material in drawing that is basically sound and which will be useful to him in his normal life situations. Throughout an attempt has been made to restrict the content to those social and economic aspects of drawing as they impinge upon an American way of life. The manual should be useful to teachers of drawing in senior high schools, technical institutes, and in junior colleges. The projects are carefully graded and there is an apparent provision to meet the needs of students of varying abilities and divergent interests. Like so many texts of this sort, one must use such a manual before an opinion may be given concerning its value, and then its value may apply to a specific situation only. This manual appears to meet all of the requirements for a book of its kind.—WILLIAM P. SEARS, New York University

The Outlook *for* Teacher Education *in* Industrial Arts

By WILLIAM T. BAWDEM

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THE war emergency has drastically curtailed the enrollment in teacher-training institutions and thus caused a hiatus in the normal flow of the supply of trained teachers, and a temporary slackening in all activities of the institutions themselves. This upheaval affords an opportunity of which we should avail ourselves to take stock of our work and to determine what improvements we can make in the light of what we can see and know. If we use this breathing spell to re-examine our objectives and to evaluate our accomplishments, and then go to work immediately on the indicated changes and improvements, we shall at least be making good use of our time.

Agreement On Objectives

We are far from agreement on objectives, if we may judge from the diversity of means set up for attainment. For example, if a department consisting of one man offering courses in woodwork and drafting is adequate for attaining the objectives of teacher education in industrial arts, then it may be difficult to explain or justify the department consisting of a dozen or more men offering a variety of courses in metalwork, automechanics, aviation, electricity, printing, plastics, photography, pottery, jewelry, bookbinding, leather tooling, and other crafts, in addition to the staple woodwork and drafting. If we dig below these surface comparisons, we may discover that what appears to be diversity of objectives is explained by diversity of conditions and demands. The one-man department may be discharging its function as effectively as the ten-man department in a different environment.

It is difficult to state the aims of teacher education in industrial arts without first stating the aims and content of the program of industrial arts in the secondary school for which the teachers are to be prepared. Avoiding that approach for the sake of brevity, let us try to set down an outline of aims to which, possibly, we can all agree:

1. We should endeavor to exert some positive influence in the direction of attracting and selecting young men (and women for certain phases of the work) who possess the necessary physical, intellectual, and emotional background that gives promise of success in this exacting work. Unfortunately, there are still superintendents and principals who think of the industrial-arts shop in terms of a last refuge for boys who are unable or unwilling to make good elsewhere. Unfortunately also, a similar attitude appears

occasionally in the teacher-training institution, and there are those who hold tacitly or openly that a young man who is not intelligent enough or industrious enough to succeed as a teacher of languages, or mathematics, or science is good material for the making of an industrial-arts teacher.

2. We can all agree that the shop teacher, like any other teacher, must possess or acquire the accepted minimum essentials of the good teacher, including:

a. An understanding of the learning process, and of the child mind and how it develops;

b. An understanding of the basic principles of teaching, ability to apply these principles, and facility in using approved and tried methods of teaching and class management;

c. An understanding of a modern philosophy of education and of the place of industrial arts in modern education, together with ability to discuss these matters effectively with his associates;

The accepted minimum qualifications of character, personality, appearance, health, vitality, and leadership ability apply to the shop teacher equally with all other teachers; and, in addition, to succeed as a shop teacher one must possess versatility, adaptability, initiative, and first-hand knowledge of industry and of industrial processes;

Finally, we can all agree that the shop teacher must possess the requisite knowledge and skills in the industrial-arts shopwork and drafting subjects he may be called upon to teach. In this connection, it is necessary to admit that there are some industrial-arts teachers in our high schools whose entire personal equipment is comprehended in the sentence that introduces this paragraph, and who are not aware of any deficiency in their preparation. Whether some teacher-training institution is responsible for sending these men out with this point of view may never be known, but it is a condition that must be remedied. At least part of the responsibility lies with school administrators who employ teachers who possess no other qualifications for the job.

This is an appropriate place to digress far enough to point out that many of the criticisms of industrial-arts in the public schools, when analyzed, reduce down to a confession that a teacher has been employed or retained on the job who is not adequately prepared, or who is unwilling to keep himself in step with progress, or who is unfortunate enough to be working under conditions where the stimulus of a wideawake and progressive administration is lacking.

3. Another plank in our statement of the aims of teacher education in industrial arts has to do with relationship to graduates after they leave the campus. Very seldom are suitable facilities provided, but the teacher-training institution cannot hope to discharge its function fully unless it maintains active contacts with teachers where they are at work. These contacts are essential from the point of view of the institution as well as from that of the graduate. The teacher needs the assistance of skilled technical supervision and the stimulation to continued professional growth so often lacking in the small high school, and the institution needs continuous and first-hand knowledge of the problems and conditions encountered by graduates in order to vitalize its program.

Undoubtedly, some industrial-arts departments in teacher-training institutions are falling short of their potential attainments because of inability to meet this test.

A Study of Causes

Making due allowance for special conditions brought about by the war emergency, a candid appraisal of the status of industrial-arts in the high schools indicates that the aims of teacher education as outlined above are in many instances not being realized. Industrial-arts is losing ground in some places, and not making progress in others, largely because of the poor quality of the teaching or the personality shortcomings of the teachers. Some of the latter deficiencies could be removed or prevented by more effective measures for eliminating unpromising candidates at the source, and some of the former could be attacked by systematic visits to schools where graduates are employed.

It is doubtless true that the publicly supported teacher-training institutions cannot go far at present in the direction of refusing to admit candidates. Certainly the industrial-arts department, independently of policies pursued by other departments, cannot set up rigid entrance standards based on estimates of probable success in teaching. And yet it would seem that two steps might be taken to afford at least a partial solution to the problem. One is to emphasize with students in training, on all suitable occasions, the qualities that are essential to success in industrial-arts teaching. Through the medium of vocational counselling it may be possible to arouse serious doubts as to the future in the minds of certain individuals whose ambitions should be diverted to some other sphere of activity. The second is to discuss this problem with superintendents and principals, the prospective employers of graduates, and in time induce them to be more discriminating.

By these and other informal measures some improvement may be brought about in a situation that does not appear likely to yield readily to direct frontal attack. These and other measures that will suggest themselves upon further examination of the discrepancies between aims and accomplishments will also afford ample opportunity for the exercise of ingenuity and the application of our utmost efforts while we are waiting for the dawn of those postwar problems that are still beyond the horizon.

Diversification

Let us turn now to look through another window. A few years ago students of teacher-education curricula were disturbed by reports of what was going on in high-school industrial-arts. The results of surveys were published which showed that 30, 40, even 50 or more different subjects were being taught in high-school shops under the designation, industrial-arts. The titles of subjects or courses were sometimes confusing or ambiguous, and there was undoubted duplication under different titles. It may be assumed that some so-called courses were no more than "topics" included in a comprehensive shop course, and may have been limited to the making of one or more projects, and requiring but a few hours' time. Undoubtedly also, some courses were offered in only a few schools in the entire country, and were explained by special and unusual conditions. If we make allowances for the

trivial, the casual, and the unusual, and reduce the lowest estimates by 50 per cent, we still find at least 12 to 15 shop subjects, exclusive of drafting, rather commonly offered in the high schools, although we seldom find such a spread in any one school.

From the standpoint of the typical teacher-training institution, the necessary facilities and personnel for preparing competent teachers in a dozen or fifteen shop subjects, in addition to drafting and design, are quite beyond the realm of possibility. From the standpoint of the individual student, the prospective teacher in training, if he succeeds in mastering the elementary processes of four or five shop subjects in the four-year undergraduate curriculum, he is well above average. Both institution and student must make choices among all the various possibilities, the former limited by the budget and available space, and the latter restricted by what is possible for one individual to accomplish in a given amount of time, and both influenced largely by placement-bureau calls for teachers.

It is easy to see two sides to this question as to the desirability of widespread diversity of subjects and courses. It has undoubtedly been a good thing that teachers and supervisors have been free to experiment with a great variety of tools, materials, projects, and contacts with industry. By these means it has been possible to discover talents and to encourage the development of interests that might never have come to light otherwise. It seems entirely possible and logical that programs differing in significant particulars should be evolved to meet differing sets of conditions in various sections of the country. This experimentation may yet lead to highly desirable improvements and modifications in teaching methods and procedures. And finally workers in these diverse fields have added greatly to our store of knowledge and to the literature of our field.

Furthermore, if the teacher training institution prepares teachers only for those shop subjects now commonly taught in the high schools, this policy would lead to the perpetuation of what is, instead of encouraging the promotion of what should be.

The other side of the question is the undoubted lack in many schools of adequate returns in learning and pupil development to justify the time, effort, and expense devoted to experimentation. It is unreasonable to suppose that so many different shop subjects have been adequately analyzed and the resulting materials effectively organized into learning units, skills, and sequences. It is also unreasonable to suppose that industrial-arts teachers generally are capable of carrying on experimentation in the sense of making significant contributions to the theory and practice of industrial-arts. Only the exceptional teacher possesses the requisite native ability and adequate training for discharging this function. It may be conceded that some boys, under certain teachers under favorable conditions, may profitably pursue a program of shop activities in which unforeseen values and outcomes are expected to develop from the initiative of the boys as the work proceeds, but for the general run of high school classes such a program will hardly rise much above the level of "busy-work."

One reason why woodwork and drafting continue to hold indispensable places in the industrial-arts pro-

gram, even in regions where "wood is no longer used in industry," is the rich and inexhaustible content of teaching material, well organized and universally available, as well as in the wealth of methods and procedures that have withstood the tests of time and experience. It will be many years before the teacher may count on having available for his use equivalent teaching materials for 12 to 15 shop subjects.

Disillusionment

Following the close of hostilities we may expect a great revival of interest in industrial-arts in the public schools. This development has been forecast by so many students of educational trends that it seems to be accepted as an assured fact. Employers who have been obliged to recruit workers for rapidly expanding industrial plants have testified that the most promising material is boys who have had some thorough instruction in high-school industrial-arts shops. Even without plant training such boys are able to perform a surprising variety of mechanical tasks, and they respond remarkably to special training or coaching. Also, in the armed services, the industrial-arts background has proved its value in countless ways. What has been so thoroughly and so widely demonstrated during the war emergency will not be forgotten with the return of peace. Hereafter it will be much easier than ever before to promote industrial-arts in the schools, and we may look forward with confidence to the time when its benefits will be made available to practically every boy, and to many girls, too, as they should be.

The fly in the ointment is that the pressure for expansion and improvement will not always be intelligently applied. Looking back from postwar perspective, many mistakes will be made in relating effects to causes, and disappointment will follow rosy expectations.

In the superficial view of the public the consequences of two or three years of industrial-arts instruction in high school may appear to be substantially the same as those of a short period of intensive plant training designed to prepare the worker for performance of some machine operation or some other narrow specialty. Industrial-arts produces certain fundamental changes in the individual, which are partly the effects of time and experience, and which enable one to adjust himself readily to a variety of activities and situations, some of which may lie entirely outside the specific instruction received. He can do so many different tasks well that it seems as if he must have been specifically trained for them, which, of course, is not so. He is adaptable in several directions, and this is one of the unique values of industrial-arts.

On the other hand, the intensively trained factory worker is prepared to do some one thing well; so well, in fact, that he is paid liberally for doing it. Too often the training is of comparatively little value for anything else. If the worker is shifted to another job, or even to another machine, another period of training is necessary. With each successive period of training and shift of jobs the worker naturally acquires a growing repertory of things he can do, but certain developmental values are often lacking. This method is not so effective in developing ability to analyze a situation, to recognize and utilize relationships, to select and

adapt means to ends, and to exercise initiative.

We must be prepared, therefore, to meet a demand for the results we have been accustomed to attain through well organized programs of industrial-arts, but under the new setup to be accomplished by something approaching the intensive and abbreviated periods of factory training. This pressure will be difficult to resist. The public will remember very distinctly that the factory-training methods were very effective, for they qualified the trainee for good wages in a very short time.

Again, the public will remember that the factory training did not cost the taxpayer anything. It may be difficult to secure the appropriation of adequate funds, especially for the inauguration of new programs of industrial-arts in high schools where none existed before. There will be an increasing tendency to consider some of the various forms of subsidized schooling, for which aid may be secured from state or federal funds. There may be some hesitation about meeting the specific conditions set up to secure reimbursement, but in the end objections are likely to be overruled, for it is sometimes easier to eliminate obstacles to the acceptance of a reimbursement check than it is to secure approval of an appropriation for a legitimate expenditure.

The consequence may well be that the community will receive partial reimbursement for expenditures that pay for something that it does not really want, or that it only thinks it is receiving. In the mistaken belief that it cannot afford to pay for a real program of industrial-arts, from which all boys will benefit, it accepts something else which will benefit only a selected few, and which must meet certain special conditions and carry the designation, "vocational," in order to secure partial reimbursement. It will be a miracle if the expected vocational values are realized, because of the youth and immaturity of the pupils, because of failure or inability to ascertain future vocational aptitudes and interest, and because the overwhelming majority of youth attend school in communities too small to provide a satisfactory spread of opportunity for choice in selecting vocational courses.

For these and other reasons many communities will almost certainly provide their young people (and a small fraction at that, instead of 100 per cent) with something that is neither good industrial-arts nor genuinely functional vocational education. Too often the schooling provided will be a hybrid that will not stand up under intelligent examination and that will be disappointing in results in the lives of the young people themselves. It will be impossible to fit this anomalous makeshift for a genuine educational project into a sane philosophy of education.

Relation to Teacher Education

All this is of significance to teacher education, because, first, it would be a betrayal of trust to prepare teachers to function in a program that cannot be defended on its merits and that hold no promise of ultimate success, and, second, it is the responsibility of the teacher-training institution to send out graduates, if possible, who are familiar with the conditions which are essential to the success of a program of industrial-arts, on the one hand, and of a vocational course, on the other. When we reflect upon the stage of develop-

ment and intellectual attainments of the usual graduate of a four-year curriculum for the preparation of teachers, we cannot fail to realize that it is expecting too much of these young people that they shall qualify as leaders of community gropings after the light, or as arbiters of community disputes.

Conclusion

There are other aspects of the outlook in teacher education that should receive attention if space permitted. Let us bring this discussion to a close with one more observation. Leaders in the movement for teacher education in industrial-arts have for some time been concerned with the problem of graduate work. Adequate preparation of the industrial-arts teacher seems clearly too great a task for the typical four-year curriculum. As has been pointed out. the industrial-arts teacher needs all the personal and professional qualities that we expect of any other teacher, and, in addition, special skills and background that are not required of any other teacher.

Every prospective teacher of English or mathematics enters upon the four-year teachers-college course with a background of from six or eight to ten years of study of the subject in which he elects his "major." Almost never does the ctudent who elects an industrial-arts major possess anything approaching this familiarity with the field in which he plans to teach. In many cases, he presents himself with no previous instruction whatever in shopwork or drafting. Time must be taken, therefore, from the all-too-short period of four years to build a back ground and to achieve proficiency in the rudiments of at least three or four branches of shopwork.

Realization of our inability to do a satisfactory job in four years causes us to welcome the opportunity to add a fifth year of graduate study leading to the Master's degree. And it is because we see so many things that we fail to accomplish in four years that we have such great diversity of opinion as to what is best to do in the fifth year. Here is one of the great challenges and one of the great opportunities in the outlook for teacher education in industrial-arts.

"On the side of the pupil, handwork is a medium of expression in terms of form, color, and material; in its relation to social life, it is essentially a means of interpreting art and industry."—John Dewey, (1901).

What Our Students *in* Service Are Thinking About[1]

Its Bearing On Education

By W. R. HATCH

Department of Botany, State College of Washington
Pullman, Washington

IN this study I have tried to discover what our students in service are thinking about and what bearing their thoughts may have on post-war education. Before we talk with our servicemen, however, I believe we need to consider our position, the position of higher education.

What has the war done to our kind of education? It hasn't stopped it. It hasn't changed it yet. It has simply drawn off the better part of our students. While these students are no longer being educated by our methods, their education has not ceased. What has happened is that our kind of education has been taken to the proving grounds where it is being tested over a difficult course. What many an educator will view with mingled feelings is the fact that a good many of his students will be returning to tell of the results.

What the war may do to our kind of education we, of course, do not know, but we do know that when the fighting is over our colleges and universities will be swamped with the heaviest enrollments in their history.

To prepare against the day of this flood is the real purpose of this paper. To do this I think we need to know *what our students in service are thinking, and what bearing their thought may have on post-war education.*

To try to determine what the attitude of our returning students may be I have made it a point to talk with those of our students in service who have come back to the campus. As a matter of straight reporting, this is what experience in the armed forces did to these men.

In reporting my conversations with service men (all students or alumni of the State College of Washington), I shall let the boys speak for themselves.

"After you leave the States and certainly after you have been in combat, you discover, sometimes for the first time, what things are really important. What are they?

"Well, it's the folks back home, the family, the girl friend. Only the folks at home sometimes become strangers to us. My girl friend, for instance — we considered ourselves engaged, but on my last furlough we just didn't hit it off. She hadn't changed, but I had.

"Then it's the outfit — my buddies.

"And finally, believe it or not, we get to thinking, not so much about the

1 Suggested by the article, "What Soldiers Are Thinking About," Pvt. Dale Kramer, "Harpers Magazine," December 1943, pp. 68-75. In this paper, however, we are concerned only with college men who have "gone" overseas or out upon the seas.

war, as what we want to get out of life when we come back."

"I do not believe any of the officers in our outfit ever want to make more than $3,000 a year."

"I know that a good many of the officers (and enlisted men as well) do not want to go back to the work they were in. I spent six years preparing for the law. Now, I think I shall go into personnel work."

"The Army is the only real fraternity that I have known."

"The men want to be wanted. They do not care always who writes to them so long as someone does."

"The Army shook me out of my provincialisms. I once thought that I should have to make my home in the Inland Empire. I know now I could be happy anywhere."

"The Army has shown me the meaning of tolerance. Drunkenness no longer disgusts me. I find that I cannot draw the line between right and wrong as easily as I used to."

"The other day I met a sailor on a train. Typical, keen American boy. Graduate of a small town high school. Enlisted in the Navy five years ago. I asked this lad what he intended to do after the war, and he said: 'Get me an education!'

"An education? What kind; technical? He jumped me. Nope, not a technical education. He was technical education up to here. The Navy had done all that and done it well. Radio. Radar. Television. Electronics. Calculus, even. He didn't want any more technical education. He wanted to 'learn how to become a citizen.'"[2]

Some of my informants were impressed with the efficiency with which the services had trained them, but more hoped to have time after the war to think and reason to their own conclusion and to know the reason behind these conclusions.

To broaden the base of my inquiry I have read all the articles, letters, or notes by service men, who were also college men, which have come to my attention.

In an article, "What Soldiers Are Thinking About,"[3] Pvt. Dale Kramer has this to say:

". . service in the Armed Forces changes men in numerous ways. More than anything else it stimulates thinking. Deep in his core the soldier, while perhaps not expecting better things from this war, very strongly desires them. He ardently believes that he should not fight in vain . . . .

". . get a little deeper and you will find serious ideas on how he wants to spend the rest of his life. This is mostly personal . . .

"The main point is that a yeast is working. Soldiers are brought up abruptly against matters with which most of them would not otherwise have considered it their business to grapple . . . If the present generation, unlike the soldiers of the last war, should believe that military victory would make the world safe for democracy (with all that the slogan implies), they would be ready at the finish to go home and

2 Tunis, John R., "In Search of an Education," radio address over Mutual Broadcasting System, February 21, 1944.

3 Harpers Magazine, December 1943, pp. 68-75.

consider the job done. They would settle down as best they could, accept without question any peace treaty cooked up, and innocently hope for the best.

"No doubt many will do that anyhow. They will slip back into their old environment and forget they ever were away. The possibility that the majority will do so cannot be precluded.

"It is true that the experiences of the soldiers of the last war had no very noticeable effect on events. But they had no memories of the fatuous twenties or the miserable thirties which resulted from them. Moreover, twelve or fifteen million men will have carried arms in this war. That is roughly four times the number who put on uniforms the last time. If the war were to end now, the average length of service would be about twice as long, and even the most optimistic agree that it will be another couple of years before the guns are laid away.

"The most important thing in a soldier's life, outside the physical essentails, is comradeship. It is something that is in many ways new to him.

"In addition there is the breakdown of provincialism through association with men from other sections of the country and the peoples of other lands, and no one can deny that some of America's isolation has come from simple lack of knowledge of how the world is laid out."

The following are excerpts from a letter written from the South Pacific just before the battle for Munda.[4]

"They have talked to me about the things they want to do when the war is over . . . . What they all have in common . . . is a kind of splendid and vague impression of what is right and needful . . . . what is true and lasting . . . . and, while they curse it affectionately, what is good.

"What they want, with a desperation that shows through them like a light, is a place where leadership rises continually from the source, and discipline finds its best expression in freedom.

"Maybe the answer is revival, a sweeping of the minds and souls of men with the exciting vision of the future of the spirit — not of the future of prefabrication, power politics, pundits and pap. By revival, I do not mean saw dust and exhortation, but the leaping of ideas and faith from one soul to another the way a crown fire goes through a forest."

Commander John H. Chipman, in a letter to the *Dartmouth Alumni* Magazine,[5] says:

". . . . the pursuit of culture for culture's sake brings its own reward. Students enjoying this pursuit during their undergradate days can investigate and enjoy the 'American Way of Life' the rest of their days. This is Democracy in operation, the ideal we strive for but which requires eternity to reach."

Lt. Herbert Mattlage, in another letter to the *Dartmouth Alumni* Magazine,[6] writes as follows:

". . . . true, some of us haven't been in tough spots, and others have lived through all that men could endure . . . . to all in spare moments comes a striving to find a reason or reasons for our fighting. What are we trying to protect? to gain? We think first of families, wives, and

4 Anonymous, "Open Letter to My Wife," "The Saturday Evening Post," March 25, 1944, page 34.
5 Dartmouth Alumni Magazine, January 1944, page 20.
6 Op. cit., page 21.

sweethearts, and then of our way of life — and to many of us, Dartmouth is at its roots. From her we learned — in class and out, from studies and from that intangible something —to live a fuller life."

The following excerpt is from a letter written by a Navy surgeon from the South Pacific:[7]

"The thing that is important to us is first to win the war and then to set about rehabilitating not only ourselves but the people in India and China and Japan and Germany so that we can live together and call each other friends. It seems to me that that is what we set out to do . . . . it is bitter knowledge indeed to see how infinitely little we are likely to attain at all.

"I wish there were words adequate enough to explain . . . .how much it means to us to win completely and unequivocally so that our sons and our sons' sons, and those of our enemy need not know this again; how much it hurts to be forced to realization that so many of our hopes are empty.

"The plain and simple truth is, I'm afraid that we as a people have not yet grown big enough, tolerant enough, wise enough, nor just enough, to manage our own affairs with honor and justice . . . . We are still trying to delude ourselves with the idea that we are a democracy instead of accepting the truth that we are not, and planning ways and means of becoming one some day."

A pilot, Major Frank R. Royal, speaking before the Herald Tribune Forum,[8] describes the "fundamentals" for which he and his comrades are fighting:

"All over the world, manning battle lines so remote that at times they seem outside this world, are hundreds of thousands of young Americans who have an inalienable right to be heard, to take part in shaping the world we want.

"What do we want in the post-war world? We want . . . . security in which every man, regardless of race, color or creed, may have the right, the hope and the assurance that he may have a home free from the threat of sudden death, a family reared in an atmosphere of peace and freedom, *schools where we may teach realities,* churches where we may worship without restraint, a government following the will of the majority while yet protecting the rights of the minority.

"Fundamental thoughts? Yes. Fundamentals are real in a foxhole.

"Those who man the distant battle lines place their trust in their fellow citizens at home . . . . those at home must protect that trust."

What are our students in service thinking about; what has their experience overseas and on the seas taught them?

It has stripped from their eyes the cataract of materialism — read their statements for yourself — and with a clearer vision they have discovered that the true values are not material but are personal, human values. Money and the things money buys, or a life spent earning money, or an education that is too preoccupied with the techniques by which its recipients earn their living — these things are no longer as important as they used to be. The war has taught them that there is little relationship between a pocket book and happiness. They have also

7 Anonymous, "When The Sea Shall Give Up Her Dead," "Time," April 24, 1944.
8 Address before the Fourth Session on "Our Part in the Post-War World—United States."

learned that there is even less relationship between the right and wrong side of the tracks, the color of one's skin, or the colors in one's flag, or the investments of one's religion, or the symbols of one's party — and one's real worth.

From their experience in a people's army fighting on the battlefronts of the world has come a growing understanding that there is such a thing as "the common humanity of man." And with this understanding has come a new sense of responsibility. And so we find them thinking and talking about citizenship, even world-citizenship; about democracy, more democracy at home and abroad; and of freedom, for freedom makes sense where they live.

What bearing do these thoughts have on education?

Their discovery that money and a life spent making money do not "pay off" when the chips are down, or at any other time for that matter, could mean that a college education that justifies itself to its students in terms of the pay check it will ultimately provide, will not justify itself to them.

Their interest in personal values, people — the people back home and all kinds of people, rich and poor, black and white, Yankee and muzhik, Jew and Gentile, Republican and Communist — this also has implications for the educator because it could mean that a college education that loses sight of these values, the values that give dignity to man and give meaning to his society, is not the kind of education they found "right and needful" in their slit trenches.

Their discovery of the importance of citizenship, democracy and freedom could mean that a college education that has not made this discovery or at least does not reflect it may seem cloistered, unreal and possibly unimportant.

Unfortunately for higher education, college presidents and college professors did not go ashore on Saipan or pick their way through the mine fields of Normandy. Those who supply the sinews of education, the voter and his senator, the small business man and the large one, the worker and his organizer, the farmer and his lobbyist, they too, unfortunately for education, did not go ashore on Saipan or in Normandy . . . . or at least, not enough of them.

Not all our students in service realize what has happened to them, and of those that do, only a few can tell you what has happened. If, however, you will talk with almost any student who has seen service outside the United States, and you talk with him quietly, without embarrassing him by making moral judgments, I believe you will discover that the quotations included in this paper are typical and that the interpretations are fair.

Of course this thing that has happened to the service man who leaves the states is not permanent. He can slip back into his old ways of thinking and acting — our ways — very easily, but with this difference (he may not understand it, but it will color his reactions for months and years to come): he is very likely to feel a blind and choking sense of frustration. He may not know who or what is to blame, but he will know that something fine and something good went out of his living when he came home; and he may hold us, the educator, along with the rest of society, respon-

sible. Cynicism could replace his ideaism, and he could become as calloused as he had been sensitive, as selfish as he had been selfless. We must welcome these, our students, as any sensitive and understanding parent might. If we are cynical, unbelieving, un-understanding and unyielding, the only positive good that this war might have produced will be lost, and in this loss the soldier will have learned to hate society, and society to hate itself.

BOOK REVIEWS

Permanent Learning. By W. H. Lancelot. New York. John Wiley and Sons, Inc. 1944. x and 221 pages. $2.25.

This practical and sound volume should be of great help to those who look forward to teaching as a career and to those teachers already in service who wish to evaluate their skills with the aim of improving their effectiveness. Professor Lancelot, who is a professor of vocational education at Iowa State College, disposes of the old chestnut that "Teachers are born, not made" and then he goes on to indicate the goals of education and the skills and techniques necessary for a teacher to possess in order that pupils may approach these goals with a maximum of ease and with efficiency. Throughout the author stresses the importance of making knowledge function in the lives of students. There is constant emphasis upon learning by thinking and the development of right habits of thinking. Wisely Professor Lancelot points out the importance of ideals and values. The book tersely attempts to translate sound educational theory into good schoolroom practice. Here is no mere watering down, nor over-simplification. The author is to be commended upon the splendid pattern upon which he worked. *Permanent Learning* should prove to be a useful book in teacher-training institutions and on the desks of supervisors who have to do with the induction of beginning teachers.—WILLIAM P. SEARS, JR., New York University.

Quebec Historic Seaport, Mazo de la Roche, 212 pages, 17 Ill., index, Doubleday, Doran & Co., New York, 1944.

Quebec Historic Seaport is vividly written and is concerned with the most historically interesting center of French Canada. The book begins with the voyages of Cabot and Cartier and the first settlements on The Rock. The author describes the journeys of Champlain and the foundations of New France that were focused around Quebec. The arrival of the marriageable "King's Girls," the work of the pius friars and the heart-breaking exertions of some governors of the country compared with the pomposity of others are sympathetically told. The epic struggle on the Plains of Abraham between the forces led by Montcalm and Wolfe is well described. United States readers will be interested in the quite different viewpoint of a Canadian writer toward English and American leaders in the Revolutionary War compared to their traditional treatment by United States writers. Teachers and tourists will find Quebec Historic Seaport both interesting and informative. The book is one of a series on seaports; others so far published being on Montreal, Gloucester, Seattle, Baltimore, Honolulu, New Orleans, and the ports of British Columbia.—OTIS W. FREEMAN.

EDITORIAL

ALL HAIL *to* THE TEACHERS

By CARL G. MILLER

WITH another school year closed, it is time to give the teachers a bit of cheer.

Every now and then teachers need to be reminded of their importance. Teachers, of course, are engaged in education, and teachers are essentially the educators. It is true that the educational system contains other functionaries, such as presidents, registrars, superintendents, principals, and the like, but these, from a sort of absolute point of view, are only indirectly engaged in education. They should be considered hand-maidens to the teachers, who do the real educating.

Teachers are like infantry-men, tank men, cavalry men. They contact the enemy; they do the real fighting; they suffer wounds; they die; they win the "war." Other officials, such as superintendents, do helpful things such as arranging supplies behind the lines and indicating which unit should do which. But the real trigger-pulling, the real sword-thrusting, the real conquering of territory, the real destuction of the enemy are done by teachers.

Once in a while a president or a principal decides, as the result of a fine old tradition, that he ought to be a real educator, too. He insists on teaching regularly one group of students. By so doing he becomes more than a president or a principal; he becomes a full-fledged educator. He teaches students. He appreciates the real problems of education and as a result his problems of direction are solved with more intelligence and sympathy.

Now if teachers are the real educators they should be paid well for their work. But this, to be sure, is not the case. Teachers through the decades in American history have been the "goats." They and their pay have been managed too much by school executives. They have been the victims of too many School Board members who were more interested in saving the taxpayers money than in educating youth. Also, teachers' associations have not put sufficient emphasis on the welfare of the persons who do the real educating. Sometimes association directors appear to teachers as so busy with research projects, with matters of organization, with speech making, with preparing the association's magazine, *et cetera,* that the real job of providing American youth with well qualified and well paid teachers is the mark they missed. It is time now to put teachers in the same class with other workers who have the nerve to believe in themselves and what they do and then have the nerve to name the price for their services.

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Make an Honest Report: Why we mustn't use copyrighted material in our reports without crediting the source; using direct quotations; using borrowed ideas; how to write credit lines and prepare bibliographies.

Use a Dictionary: How dictionaries differ; kinds of information they contain; learning pronunciation marks.

Use a Map: Reading a map; kinds of maps; scales of distances; physical features; political features.

Use an Atlas: How to locate places on atlas maps; importance of index; pronunciation; other information in atlases.

Do Committee Work: Working together in committees; avoiding disturbances; tolerance; committee assignments; sharing the work.

Take Part in a Social-Studies Discussion: Cooperative venture in thinking; connecting with statements of others; agreeing with others; disagreeing.

Use the Library Card Catalogue: How cards are filed; cross-indexing; using call numbers; selecting likely books; locating books on shelves.

Use an Index: Importance of book indices; hunting topics under various headings.

Use the World Almanac: .900 pages of facts; how to locate needed facts; hunting through the index.

Locate References on a Topic: Ways of finding references in the library; card catalogue; encyclopedias; clipping files, etc.; compiling a bibliography.

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